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SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT

CAPITAL IMPROVEMENT PROGRAM
For Fiscal Years 1993-2002

July 1, 1992

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SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT

DRAFT FY 1993 - 2002 CAPITAL IMPROVEMENT PROGRAM

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CONTEXT OF THE PROGRAM

BART faces an enormous challenge as it prepares to enter the 21st Century with this Capital Improvement Program. The District is committed to building a multi-billion dollar program of rail system extensions, while at the same time undertaking an unprecedented program of rehabilitating and upgrading the existing system -- all while maintaining and even improving the level of service provided.

AN AGING SYSTEM

BART is no longer a sparkling new system. The onset of aging makes it essential for BART to begin rebuilding before it experiences the declining spiral of effects that many older rail transit systems have experienced due to their inability to attend to preventative maintenance and rehabilitation in a timely manner. This is not glamorous, high-visibility work, and it can be very expensive. But it is essential, and in the long run, it is much more cost effective to rehabilitate systems before reaching the point of failure than to try to fix the problems after they become readily apparent. This will also avoid future degradation of service and consequent loss of patronage and fare revenue.

BART must not only maintain its current level of service, but also provide even more service to meet the needs of a growing market. This Capital Improvement Program reflects this need in identifying major rehabilitations for transit vehicles, train controls, stations, maintenance facilities and other parts of the BART physical plant.

A GROWING SYSTEM

BART patronage has grown dramatically in the last decade, about 80 percent growth from a little under 140,000 trips on an average weekday in 1980 to over 250,000 daily in 1991. Patronage is expected to continue to grow in the future, and this will require additional facilities. While BART invested heavily in increasing its people-carrying capacity over the last ten years, access to stations has been a constraint to growth in the past. The current capital program includes significant planned improvements to increase patron parking and capacity to handle more feeder buses at the stations, along with more comfortable amenities for patrons who transfer to and from buses at BART stations.

In addition, improvements in farecard vending equipment, along with implementation of better interoperator fare mechanisms, will improve the flow of patrons through the stations. And the new transit vehicles that will come on-line with the extensions will also help carry more passengers on the existing system.

AN EXPANDING SYSTEM

For much of the last ten years, BART has been involved in detailed planning of extensions to the system, and in efforts to secure funding for building them. This current capital program envisions completion of extensions to Dublin-Pleasanton, Warm Springs, West Pittsburg, Colma and San Francisco Airport by the year 2002.

FY 1993 – 2002 CAPITAL PROGRAM

PROJECT CATEGORY/TITLE	TOTAL ESTIMATED COST	PRE–FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
SAFETY & SECURITY				
Cathodic Protection Transbay Tube	2,600,000	935,000		1,665,000
Asbestos abatement, Phase 1	814,000	135,520	678,480	
Asbestos abatement, Phase 2	4,886,000	421,676		4,464,324
Repl. Fire Alarms & Improve Vent Fans	1,686,824		1,686,824	
Safety improvements	20,505,400			20,505,400
Seismic retrofits	178,518,000			178,518,000
SUBTOTAL:	209,010,224	1,492,196	2,365,304	205,152,724
SYSTEM REHABILITATION				
Replace escalators & Rehab. elevators	9,931,099		9,931,099	
AFC Equipment Replacement	50,000,000		500,000	49,500,000
Rehab. A&B cars	454,000,000	13,383,361	50,000,000	390,616,639
Controls & communications rehabilitation	8,067,625			8,067,625
Mainline rehabilitation	52,832,303			52,832,303
Stations rehabilitation	44,550,380			44,550,380
Shops & yards rehabilitation	41,370,552			41,370,552
Work equipment replacement	16,889,235			16,889,235
Repl. AC/Muni transfer machines	240,000			240,000
SUBTOTAL:	677,881,194	13,383,361	60,431,099	604,066,734
SERVICE IMPROVEMENTS				
A.D.A. Project (Elderly & Handicapped)	2,000,000		2,000,000	
West Oakland Surface Parking	7,285,000	266,314	3,200,000	3,818,686
Hayward Transit Center	1,142,000		1,142,000	
Bayfair Transit Center (Bus Canopy)	950,000		950,000	
Automatic Transit Scheduler	375,000		375000	
Union City Transit Center	2,670,000			2,670,000
Union City Surface Parking	10,211,000	206,037		10,004,963
Alameda Park / Ride	429,000			429,000
Station entrance canopies	27,000,000			27,000,000
El Cerrito Access Improvements	12,500,000			12,500,000
Fruitvale Parking	10,692,000	180,000		10,512,000
Fruitvale Transit Center	4,645,000			4,645,000
Rockridge 2nd Deck Parking	8,136,000	382,343		7,753,657
SUBTOTAL:	88,035,000	1,034,694	7,667,000	79,333,306
OPERATIONAL EFFICIENCIES & ADMINISTRATION				
Automation of Cash Handling Operations	85,000		85,000	
Add truing pit & machine at DC yd.	2,600,000		150,000	2,450,000
FY '93 Capital Administration	2,620,165		2,620,165	
FY 93 Short Range Transit Plan	55,000		55,000	
New administration building	60,000,000			60,000,000
Repairable components	2,600,000			2,600,000
SUBTOTAL:	67,960,165		2,910,165	65,050,000

PROJECT CATEGORY/TITLE	TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
EXTENSIONS RELATED				
NXTGEN	21,250,600	1,683,333	4,149,333	15,417,934
Systemwide Radio Network	29,300,000	350,000	6,600,000	22,350,000
Train ID enhancement	4,926,856	400,000	820,000	3,706,856
A – Line Train Control Resignal	10,886,558		1,000,000	9,886,558
A – Line Traction Power, Phase 1	6,000,000		6,000,000	
A – Line Traction Power, Phase 2	26,137,000			26,137,000
Oakland Airport Connector Studies	1,500,000		1,500,000	
West Contra Costa Study AA/EIR/EIS	2,500,000		2,500,000	
M–Line Traction Power	83,000,000			83,000,000
C–Line Traction Power	69,000,000			69,000,000
3RD Generation Transit Vehicles	71,653,833	653,833		71,000,000
SUBTOTAL:	326,154,847	3,087,166	22,569,333	300,498,348
TOTAL WITHOUT EXTENSIONS:	1,369,041,430	18,997,417	95,942,901	1,254,101,112
Phase I Extensions	2,708,728,000	275,054,400	533,322,500	1,900,351,100
GRAND TOTAL INCLUDING EXTENSIONS:	$4,077,769,430	$294,051,817	* $629,265,401	$3,154,452,212

SAFETY AND SECURITY

CATHODIC PROTECTION OF TRANSBAY TUBE

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$2,600,000	$935,000	$ 0	$1,665,000

Project description:
The purpose of this project is to ensure the structural integrity of the Transbay Tube (TBT) and related facilities (i.e. San Francisco Ferry building piles and San Francisco approach tunnel). This project includes visual inspection of the TBT's outerskin, replacement of worn and missing components of the cathodic protection system and installation of rail fastener insulation.

Project justification:
Inspection of the outer skin of the TBT would provide information required to evaluate its condition in order to plan for repair, renovation or replacement. The cathodic protection system must be maintained to prevent corrosion of the TBT and related facilities. Improved rail fastener insulation is required to stop stray currents which causes corrosion of rail, rail fasteners and structures.

ASBESTOS ABATEMENT, PHASE 1

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$814,000	$135,520	$678,480	$ 0

ASBESTOS ABATEMENT, PHASE 2

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$4,886,000	$421,676	$ 0	$4,464,324

Project description:
The purpose of this project is to provide asbestos abatement work resulting from

The purpose of this project is to provide asbestos abatement work resulting from damage to building insulation at various BART facilities.

Project justification:
The October 1989 earthquake damaged asbestos-containing insulation which has increased the potential for creating airborne asbestos fiber exposure in District facilities. It is desirable to mitigate the damage to eliminate this potential. This work would be accomplished in two phases. The first phase would address the abatement of damage that has been categorized as having a relatively high potential of generating asbestos fiber exposure. The second phase would address the abatement of damage categorized as moderate and low potential.

REPLACE FIRE ALARMS & IMPROVE VENT FANS

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$1,686,824	$ 0	$1,686,824	$ 0

Project description:
The purpose of this project is to improve fire safety in the District by replacing the existing fire alarm systems, and by refurbishing and enhancing the tunnel ventilation systems.

Project justification:
The existing fire alarm systems are obsolete and no replacement parts are available. The enhancement of the ventilation system would better provide ventilation and expedite the safe evacuation of passengers during emergencies. This project would significantly improve public and employee safety.

SAFETY IMPROVEMENTS

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$20,505,400	$ 0	$ 0	$20,505,400

Project description:
The purpose of this project is to eliminate potential safety hazards within the District by:

- Upgrading the emergency lighting system in the stations and tunnels.
- Installing additional handrails and removing obstructions on emergency walkways.
- Providing electrical insulation in the 12th and 19th Street Station walls as well as on aerial structure guard rails system wide.
- Enhancing the District's fire fighting capabilities by installing motorized valves in the fire mains of the Berkeley Hills Tunnel, installing dry standpipes at I-680 and Springbrook overcrossings and implementing a plan coordinating the tunnel hose valves with their primary and secondary sources of water.
- Providing secondary containment and security for the storage of hazardous materials and waste products located at District facilities.

Project justification:
These projects would improve public safety by facilitating the evacuation of tunnels and stations and enhancing fire fighter response to fires.

SEISMIC RETROFITS

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$178,518,000	$ 0	$ 0	$178,518,000

Project description:
The purpose of this project is to enhance the system's ability to safely endure earthquakes by:

- Improving the structural strength of BART's aerial structures in order to withstand greater seismic forces.
- Improving the system of seismic detectors which slows or stops trains in the

event of an earthquake.

- Installing automatic seismic gas shut-off valves.
- Providing additional engine-generators for the event of a possible PG&E power loss.
- Provide restraints for overhead crane structures at maintenance shops.
- Provide tie downs for the stands that transit vehicles are supported on during maintenance at the shops.

Project justification:
The structural strenghtening components of this project will bring existing structures up to current seismic standards, and improve the ability of the system to withstand major earthquakes with little or no damage. Other components of this project will augment earthquake preparedness systems already in place to provide more coverage, more detailed and accurate information, and to permit faster response to protect the safety of the rail system, its patrons and employees.

SYSTEM REHABILITATION PROJECTS

REPLACE AND REHABILITATE ESCALATORS AND ELEVATORS

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$9,931,099	$ 0	$9,931,099	$ 0

Project description:
The purpose of this project is to rehabilitate all station elevators and escalators systemwide and replace the four modular escalator platform units at Embarcadero Station with heavy duty escalator units designed for transit system use.

Project justification:
Station elevators are over 20 years old. Sills, doors and hydraulic components are in need of replacement. Escalators were last rehabilitated in 1985, but the current failure trend indicates that heavily used units are beginning to experience increased failures. Action must be taken to ensure availability of units for patron convenience, to maintain station accessibility for elderly and disabled patrons, and to reduce future maintenance costs.

AFC EQUIPMENT REPLACEMENT

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$50,000,000	$ 0	$500,000	$49,500,000

Project description:
The purpose of this project is to replace all existing automatic fare collection (AFC) equipment (farecard vendors, addfare machines, and faregates).

Project justification:
The existing equipment has been in service for 20 years. It is worn, parts must be custom-fabricated, and the electronics are unable to provide needed treasury, security, and maintenance information.

REHABILITATE A&B CARS

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$454,000,000	$13,383,361	$50,000,000	$390,616,639

Project description:
The purpose of this project is to rehabilitate the original 440 car fleet of A and B cars to obtain an additional 15 to 20 years of service.

Project justification:
The original cars are approaching their design life of 20 years. They are showing signs of failure and are requiring increased maintenance. The problems requiring attention at this time cannot be accommodated by routine maintenance, but require complete teardown and rebuilding as appropriate. The cost of remanufactured vehicles is estimated at approximately 50 percent of new car cost.

CONTROLS & COMMUNICATIONS REHABILITATION

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$8,067,625	$ 0	$ 0	$8,067,625

Project description:
The purpose of this project is to rehabilitate aging aging components of BARTs controls and communications systems. The goal of this project is to install new supervising and control equipment in each of 41 train control rooms, replacing the existing Digital Transmission System (DTS) control equipment and replace, upgrade and increase the capacity of the Central Voice Recording System with a microprocessor-controlled voice recording system. The system would add voice channels for PABX, emergency telephone, train radio, hot line, public address and intercom for each of the four yards. This project will also provide small computers in each yard tower, yard transportation building, terminal zone, and the Operations Control Center to coordinate train and train operator scheduling, and provide a link to the transportation computer network.

Project justification:
The existing DTS equipment is an obsolete, unique-to-BART control system that is very awkward and difficult to maintain, virtually impossible to expand, and lacks the ability to perform advanced control tasks without a computer system attached. The replacement network would be an expansion of the system furnished for the extensions. The current recorders used in the District's safety sensitive recording system are unreliable due to age and maintenance problems. The equipment is 18 years old, is obsolete, and parts are no longer available. A recent yard safety audit recommended a secure yard voice recording system be instituted to prevent the possibility of tampering. The current system capacity must also be increased to support additional remote recorded voice channels. The yard tower data network would allow the operation of additional trains without an increase in staffing levels. This project would automate and facilitate the critical tasks of tracking train lengths, car locations, and train operator assignments.

MAINLINE REHABILITATION

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$52,832,303	$ 0	$ 0	$52,832,303

Project description:
The purpose of this project is to replace and repair the components of BART's mainline which have deteriorated due to age and frequent use. This includes the following tasks:

- Replacement of worn curved rail and switch components throughout the system.
- Replacement of specialized rail components throughout the system such as direct fixation fasteners, insulated joints, rail lubricators, and timber in maintenance-of-way access points.
- Replacement of the existing wooden ties on the Concord Line with concrete ties.
- Replacement of 65 line sump pumps in tunnels and subways systemwide.
- Repair and modify damaged portions of concrete subway tunnel under the Lake Merritt Channel.
- Replacement of traction power circuit breaker components.
- Improvement of traction-power substation regulation to give a flatter characteristic at a high average voltage level.
- Improvement of traction power substation protective relaying by adding rate-of-rise relays to each feeder breaker and by integrating these relays and the negative return ground relay into a coordinated protective scheme for each

substation.

- Renovation and replacement of traction rectifier sets.
- Replacement of aging diode/mechanical contactor negative return grounding devices with thyristor negative return grounding devices.
- Reconnection of the 1,000 volt circuit breaker transfer trip circuits to the six pair cables provided by the CCN project.

Project justification:
Many components of the trackway are 20 years old, are failing with increased frequency and must be replaced. This mainline rehabilitation project will prevent rail failures which would cause disruption and delays to revenue service.

STATIONS REHABILITATION

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$44,550,380	$ 0	$ 0	$44,550,380

Project description:
The purpose of this project is to improve the amenities in various stations and replace equipment that is no longer economical to repair. This includes the following:

- Purchase and installation of 400 new bicycle lockers to replace existing lockers.
- Repair of damaged concrete roof and waterproofing on the mezzanine level of Lake Merritt Station, in an area under Oak Street. The work would restore the structural and waterproofing integrity of the station roof slab.
- Replacement of the light standards on platforms of 19 stations.
- Replacement of the 28 sewage pumps in underground stations.
- Replacement of 116 existing motorized roll-up doors and grills.
- Replacement of eight side-winding gates at stations with roll-up gates.
- Increasing the number of women's restrooms at Embarcadero, Montgomery and Powell Street Stations.
- Replacement of indirect light fixtures with direct light fixtures.
- Modifying existing ticket encoders to read all ticket formats.
- Retrofitting all 400 watt mercury vapor light fixtures with 250 watt high pressure sodium light fixtures at District parking lots.

Project justification:

- The existing bicycle lockers are in poor shape and are not secure. Renters complain that lockers are easily vandalized. Since the current lockers are 16 years old, replacement parts for repairs are no longer available. New lockers might encourage more people to use bicycles as access to BART stations.
- A portion of the Lake Merritt station concrete roof, over the paid area of the mezzanine level, has sustained structural and waterproofing damage. The damage has caused water leakage in the south stairway area making it necessary to close that stairway whenever it rains. The water intrusion will also corrode the reinforcing steel in the concrete roof, causing further structural deterioration as the leak continues.
- The existing light standards on station platforms are corroded and need to be replaced. They are over 20 years old, obsolete and no spares are available.
- The existing sewage pumps are over 20 years old, are wearing out, are becoming uneconomical to repair, and need to be replaced.
- The existing door and grill equipment is 20 years old, wearing out, unreliable, becoming uneconomical to repair, and no spares are available.
- Debris in the eight side-winding gate tracks causes them to malfunction. Replacement with motorized roll-up gates would prevent this problem from occurring.
- The increase in the number of women's restrooms at Embarcadero, Montgomery and Powell Street Stations would provide customer convenience.
- Experience indicates that indirect lighting is not efficient in the transit environment. Subway dirt slowly covers the top of lamps and reduces the lighting level reflected by the ceiling and walls. This would reduce maintenance requirements while improving patron comfort.
- The modification of ticket encoders is needed to read ticket formats such as BARTPlus, the Universal Ticket, and others as needed.
- High pressure sodium light fixtures produce more light per watt, saving over one-third of the electrical energy, resulting in operational savings.

SHOPS AND YARDS REHABILITATION

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$41,370,552	$ 0	$ 0	$41,370,552

Project description:
The purpose of this project is to address the deterioration of the shops and yards due to two decades of continuous use and age. The goal of this project is to:

- Replace the existing wheel/axle press at Hayward Shop.
- Replace the existing wheel truing machine at the Hayward Shop.
- Replace the three existing turntables at the Richmond, Concord and Hayward Yards.
- Replace electric carts and battery chargers in the yards.
- Replace yard 1,000 volt disconnect switch enclosures, which isolate storage tracks and spur tracks.
- Replace 47 shop roll-up doors at the Hayward, Concord, Richmond and Oakland Shops.
- Replace the heating, ventilation and air conditioning systems in the maintenance shops.
- Replace the existing transit vehicle car washers located at the Hayward, Richmond and Concord Shops.
- Replace the three 10-ton and two 20-ton cranes at the Concord, Richmond and Hayward Yards.
- Resurface, restripe and relamp shop parking lots and access roads at the Concord, Hayward and Richmond Shops.
- Redesign Hayward Shop traction motor and motor alternator repair areas.
- Strip, clean and repaint entire shop floors, pits and related work surfaces at Concord, Daly City, Hayward and Richmond Shops.
- Add small traction power substations in the Richmond, Concord and Hayward Yards to supply power to the local/shop areas separate from the existing yard traction power substations.

Project justification:
This project will:

- Make the shops and yards safer places in which to work.
- Provide cost savings to the District by reducing turn-around and eliminating travel time to and from vendors.
- Improve the efficiency of the shops and yards by providing employees with dependable tools that are needed to perform their duties effectively.

WORK EQUIPMENT REPLACEMENT

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$16,889,235	$ 0	$ 0	$16,889,235

Project description:
Replace maintenance and service vehicles and maintenance equipment. This maintenance equipment typically includes such items as tools, power generator sets, light towers, grounds and buildings maintenance equipment, shop equipment, test instruments, light-duty highway vehicles, BART police and personnel sedans, and heavy-duty maintenance vehicles (diesel trucks, tractors, and track maintenance vehicles).

Project justification:
BART's maintenance equipment gradually becomes worn from use. Eventually it becomes more economical to replace the old equipment rather than repair it. The ongoing equipment replacement program assures that old, worn out equipment is replaced in a timely manner to minimize overall costs and ensure personnel safety. If this equipment is not replaced, overall costs will increase, maintenance crews will be disrupted by failed equipment, and service to patrons will deteriorate.

REPLACE AC TRANSIT AND MUNI TRANSFER TICKET MACHINES

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$240,000	$ 0	$ 0	$240,000

Project description:
The purpose of this project is to replace 16 Muni and 20 AC Transit transfer ticket machines.

Project justification:
These transfer machines have never been replaced, experience unacceptably high failure rates, and are becoming uneconomical to maintain.

SERVICE IMPROVEMENTS

A.D.A. COMPLIANCE PROJECT (ELDERLY & HANDICAPPED)

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$2,000,000,	$ 0	$2,000,000	$ 0

Project description:
This project begins BART's compliance with the A.D.A. (Americans with Disabilities Act) key station plan requirements. This first year project involves accessible-format signage and investigation of accessible AFC technology.

Project justification:
BART must implement the A.D.A. key station plan to comply with Federal law.

WEST OAKLAND SURFACE PARKING

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$7,285,000	$266,314	$3,200,000	$3,818,686

Project description:
The purpose of this project is to add approximately 1,000 parking spaces to the West Oakland Station in a new surface lot.

Project justification:
This station experiences severe patron access constraints. The parking fills early in the morning peak, limiting access to the system later in the day when ample passenger-carrying capacity is available on trains. This negatively impacts potential patronage growth and fare revenue generation. This project will help alleviate this constraint.

HAYWARD TRANSIT CENTER

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$1,142,000	$ 0	$1,142,000	$ 0

Project description:
The purpose of this project is to replace the 17 existing temporary bus bays with a permanent facility, and to improve patron amenities.

Project justification:
The temporary timed-transfer facilities developed for a demonstration phase of bus service improvements are inadequate for efficient, safe operation and patron comfort. Now that the bus service improvements are permanent, the transit center facilities should be improved.

BAYFAIR TRANSIT CENTER IMPROVEMENTS

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$950,000	$ 0	$950,000	$ 0

Project description:
The purpose of this project is to install bus-loading area weather-protection canopies and patron amenities.

Project justification:
This project will provide adequate weather protection and amenities for bus patrons in the newly expanded bus area of this BART station.

AUTOMATIC TRANSIT SCHEDULER

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$375,000	$ 0	$375,000	$ 0

Project description:
The purpose of this project is to furnish and install a computerized information system to replace the manual system now in use.

Project justification:
A computerized system would allow operators to replace pamphlets, books, maps and other paper materials with more consistently updated, reliable and easily accessed electronic information sources.

UNION CITY TRANSIT CENTER

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$2,670,000	$ 0	$ 0	$2,670,000

Project description:
The purpose of this project is to add 13 new bus bays and transfer patron amentities to the Union City Station.

Project justification:
The bus transit capital improvements are essential to accommodating service improvements being planned by AC Transit and Union City Transit. The planned capacity increases will accommodate these higher levels of service. Additional patron comfort and convenience amenities are needed to attract patrons.

UNION CITY SURFACE PARKING

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$10,211,000	$206,037	$ 0	$10,004,963

Project description:
The purpose of this project is to add approximately 600 new parking spaces to the Union City Station in a new surface lot.

Project justification:
This station experiences severe patron access constraints. The parking fills early in the morning peak, limiting access to the system later in the day when ample passenger-carrying capacity is available on trains. This negatively impacts potential patronage growth and fare revenue generation. This project will help alleviate this constraint.

ALAMEDA PARK/RIDE

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$429,000	$ 0	$ 0	$429,000

Project description:
The purpose of this project is to provide an intermodal facility to accommodate safe, comfortable and convenient off-street auto-to-bus and bus-to-bus transfers in Alameda. This project would include a parking lot and passenger waiting and bus loading areas.

Project justification:
This project would support local transit service by making the transit option more attractive. The results of this improvement would be an increase in transit patronage.

STATION ENTRANCE CANOPIES

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$27,000,000	$ 0	$ 0	$27,000,000

Project description:
The purpose of this project is to install 50 canopies over the escalators and pedestrian entry ways at ten underground stations in San Francisco, Oakland and Berkeley.

Project justification:
This project would result in weather protection for patrons entering the stations, reduced escalator maintenance costs, less escalator down time, increased security during non-revenue service periods and generally improved access to stations.

EL CERRITO ACCESS IMPROVEMENTS

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$12,500,000	$ 0	$ 0	$12,500,000

Project description:
The purpose of this project is to improve access to BART station(s) in the City of El Cerrito through patron parking expansion and possible intermodal improvements.

Project justification:
The two El Cerrito BART stations experience severe patron access constraints. The parking fills early in the morning peak, limiting access to the system later in the day when ample passenger-carrying capacity is available on trains. This negatively impacts potential patronage growth and fare revenue generation. This project will help alleviate this constraint.

Contra Costa County Measure C provides $5.5 million in funding for patron parking expansion in the City of El Cerrito. BART and the City are currently cooperating on a study to determine at which station additional access improvements are most needed and manageable. The scope of this project will be finalized upon completion of that effort.

FRUITVALE PARKING STRUCTURE

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$10,692,000	$180,000	$ 0	$10,512,000

Project description:
The purpose of this project is to add approximately 500 new parking spaces to the Fruitvale Station in a multi-level parking structure.

Project justification:
This station experiences severe patron access constraints. The parking fills early in the morning peak, limiting access to the system later in the day when ample passenger-carrying capacity is available on trains. This negatively impacts potential patronage growth and fare revenue generation. This project will help alleviate this constraint.

FRUITVALE TRANSIT CENTER

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$4,645,000	$ 0	$ 0	$4,645,000

Project description:
This project will add seven new bus bays and transfer patron amenities to Fruitvale Station.

Project justification:
The bus transit capital improvements are essential to accommodating service improvements being planned by AC Transit. The planned capacity increases will accommodate these higher levels of service. Additional patron comfort and convenience amenities are needed to attract patrons.

ROCKRIDGE SECOND DECK PARKING

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$8,136,000	$382,343	$ 0	$7,753,657

Project description:
The purpose of this project is to add approximately 600 parking spaces to the Rockridge Station on a second level deck.

Project justification:
This station experiences severe patron access constraints. The parking fills early in the morning peak, limiting access to the system later in the day when ample passenger-carrying capacity is available on trains. This negatively impacts potential patronage growth and fare revenue generation. This project will help alleviate this constraint.

OPERATIONAL EFFICIENCIES & ADMINISTRATION

AUTOMATION OF CASH HANDLING OPERATIONS

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$85,000	$ 0	$85,000	$ 0

Project description:
This project involves the purchase and implementation of a bar code inventory tracking system for the bag, stacker and magazine components of the AFC system.

Project justification:
This project would give BART the ability to easily account for all revenue containers as they move through the cash handling process.

ADD TRUING PIT & MACHINE AT DALY CITY

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$2,600,000	$ 0	$150,000	$2,450,000

Project description:
This project will provide a wheel truing machine and building at the Daly City Shop.

Project justification:
The District has only one wheel truing machine, at the Hayward Shop, to maintain 4,800 wheels. This new machine would provide additional capabilities to maintain transit vehicle wheels as the size of the fleet increases, resulting in improved vehicle availability and better patron service levels.

FY '93 CAPITAL ADMINISTRATION

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$2,620,165	$ 0	$2,620,165	$ 0

Project description:
The purpose of this project is to provide funds for non-project-specific capital labor.

Project justification:
This funding supports labor associated with the administration of capital projects but not directly funded by them.

FY '93 SHORT RANGE TRANSIT PLAN

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$55,000	$ 0	$55,000	$ 0

Project description:
The purpose of this project is to produce the FY 93 Short Range Transit Plan. This plan will outline the District's service objectives and capital program for Fiscal Years 1993 - 2002.

Project justification:
This project is needed for BART to comply with Federal Transit Administration and Metropolitan Transportation Commission requirements.

NEW ADMINISTRATION BUILDING

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$60,000,000	$ 0	$ 0	$60,000,000

Project description:
The purpose of this project is to acquire a new administration building large enough to accommodate all of the District's administrative employees in a centralized location.

Project justification:
It is often necessary for BART employees to conduct business with each other in person. Time and money are wasted as workers travel from BART's various locations in the City of Oakland to meet. The acquisition of a new administrative building would improve employees' efficiency and productivity.

REPAIRABLE COMPONENTS

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$2,600,000	$ 0	$ 0	$2,600,000

Project description:
The purpose of this project is the procurement of repairable components to buildup existing spare parts pool for A/B Cars, Communications, Component and Electronic Repair and Power & Way, in support of scheduled and unscheduled maintenance.

Project justification:
Additional repairable components are required to assure that sufficient parts are on-hand to: 1) replenish decreasing spare pools resulting from attrition and age; 2) support the "Captive Fleet" program, whereby each shop will be allocated a minimum number of repairable components to handle daily maintenance activities; 3) make allowance for the rotation of unserviceable components through the repair shop; 4) achieve the goal of 1% cars awaiting parts; 5) maintain Automatic Fare Collection and Communications equipment; and 6) provide adequate spares to support District maintenance activities in the aftermath of a disaster or an emergency situation.

NEXT GENERATION CENTRAL CONTROL SYSTEM

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$21,250,600	$1,683,333	$4,149,000	$15,418,267

Project description:
The purpose of this project is to replace existing supervisory control and data acquisition computer systems. The systems include the Destination Sign System (DSS), the Data Acquisition System (DAS), the Train Information Monitor System (TIM), and the hardware and database platform for the Central Computer System (CCS).

Project justification:
The software development and increased computer capability provided by this project are required to provide necessary computer capacity for the District's Extensions Program. This project would use fault tolerant computers capable of supporting all four systems (DSS, DAS, TIM, CCS).

The Destination Sign System (DSS) is 20 years old, has not been manufactured for 15 years and cannot be modified or upgraded to accommodate new requirements imposed by the extension stations and proposed operating plans. The sign heads are no longer economically feasible to maintain or replace in kind. The extensions will require a make/break train capability which cannot be accommodated by the existing destinations signs.

The Data Acquisition System (DAS) also runs on 20 year old computers that are beyond their economic life, cannot be modified to add the required functionality, and are no longer manufactured. Current system reliability and availability is extremely poor. This is negatively affecting the District's ability to provide timely, accurate data. The replacement would assure an open-ended system to accommodate the extensions program and future District requirements under consideration.

The Train Information Monitor (TIM) system is a train location information display system available to patrons in the faregate area. It is currently being demonstrated

in a limited manner at two stations and is planned to be installed in all stations.

This project would provide for all of these applications to reside on a common fault tolerant computer platform at Central Control and in each station. This would reduce the required total number of BART control computers by more than 60 percent. Fault tolerant hardware eliminates acute maintenance requirements usually associated with mission-critical applications on conventional type computer systems. Computer spare parts are a part of the basic fault tolerant equipment's "pairs and spares" design and need not be supplemented with a separate inventory. Hardware component failures that do occur are identified by the system and the defective components are bypassed automatically utilizing the "internal spares". Automatic alarms identify the failures to system monitors, hardware error logs and to the manufacturer's service center in real time providing for the automatic dispatch of replacement parts via next day delivery. The planned design would eliminate most single points of failure.

SYSTEMWIDE RADIO NETWORK

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$29,300,000	$350,000	$6,600,000	$22,350,000

Project description:
The purpose of this project is to design, furnish, and install a trunked radio network systemwide, replacing the radio equipment presently in service.

Project justification:
The existing radio system is inadequate to handle the demands of police operations, train operations and maintenance communications. Calls are often temporarily blocked as too many users attempt to access the system at the same time. The system is old and unreliable. A new trunked network would provide ample capacity and coverage to meet all forseeable needs, including the extensions.

TRAIN DESTINATION IDENTIFICATION ENHANCEMENT

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$4,926,856	$400,000	$820,000	$3,706,856

Project description:
The purpose of this project is to increase the number of destination bits in the train identification codes. It involves replacing the Automatic Train Operations (ATO) circuitry in stations with microprocessors, and then modify the transit vehicles after the stations are completed.

Project justification:
There are not enough bits in the existing train identification code for the new destinations required by extensions. The advantages of using microprocessors, unlike the current equipment, in the stations are that the existing equipment is old and many replacement parts are no longer made. The microprocessors would be able to process both modified and unmodified cars.

A-LINE TRAIN CONTROL RESIGNAL

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$10,886,558	$ 0	$1,000,000	$9,886,558

Project description:
The purpose of this project is to resignal the A-Line between BayFair Station and the Oakland Wye, to include changes to the interlocking in the Wye. The project includes the design, procurement, installation and testing of train control equipment.

Project justification:
This project is required to provide for operation of trains on decreased scheduled headways so that trains operating on the Dublin-Pleasanton Extension can merge with the existing train service.

A-LINE TRACTION POWER, PHASE 1

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$6,000,000	$ 0	$6,000,000	$ 0

A-LINE TRACTION POWER, PHASE 2

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$26,137,000	$ 0	$ 0	$26,137,000

Project description:
The purpose of these projects is to add five new substations along the northern part of the A-line, lower resistance of contact rail, and change the PG&E supply transformer at the Watson Avenue switching station to one of higher capacity.

Project justification:
Engineering studies show that the electrification system must be improved to satisfy voltage criteria for train operation at future service levels with the system extensions. In the absence of this project additional trains at closer headways would result in unacceptably low contact-rail voltage under normal and contingency conditions, which would cause service disruptions.

OAKLAND AIRPORT INTERMODAL CONNECTOR STUDIES

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$1,500,000	$ 0	$1,500,000	$ 0

Project description:
The purpose of this project is to perform a project update, environmental analysis and bid package for turnkey development of a connector from the Oakland Airport/Coliseum BART station to the Oakland Airport (with connections to Oakland Coliseum, the Capital Corridor inter-city passenger rail station, and possibly adjacent businesses and hotels).

Project justification:
Completion of these preparatory documents will put the Connector project in line for obtaining funds for construction. Oakland Airport has reached a critical 6 million passenger level and is now developing master plans that will include a Connector as a solution to limited passenger ground access.

WEST CONTRA COSTA STUDY AA/EIR/EIS

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$2,500,000	$ 0	$2,500,000	$ 0

Project description:
The purpose of this project is to perform an Alternatives Analysis (AA) identifying all potential transit modes (BART, Commuter Rail, Busway, etc.).

Project justification:
The I-80 corridor is one of the most congested travelways in the region and the need for transit development has been stated regionally and nationally. Completion of an AA for this corridor would be required to obtain federal funds for transit development after the federal planning process for San Francisco Airport Extension is complete. Only one AA is allowed per region.

M-LINE TRACTION POWER

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$83,000,000	$ 0	$ 0	$83,000,000

Project description:
The purpose of this project is to add low-resistance contact rail and additional substation and gap-breaker capacity at several locations on the M-line.

Project justification:
Engineering studies show that the electrification system must be improved to satisfy voltage criteria for train operation at future service levels with the system extensions. In the absebce of this project additional trains at closer headways would result in unacceptably low contact-rail voltage under normal and contingency conditions, which would cause service disruptions.

C-LINE TRACTION POWER

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$69,000,000	$ 0	$ 0	$69,000,000

Project description:
The purpose of this project is to add two new substations, larger 34.5KV cables and lower resistance of contact rail at several locations on the C-line.

Project justification:
Engineering studies show that the electrification system must be improved to satisfy voltage criteria for train operation at future service levels with the system extensions. In the absence of this project additional trains at closer headways would result in unacceptably low contact-rail voltage under normal and contingency conditions, which would cause service disruptions.

3RD GENERATION TRANSIT VEHICLES

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$71,653,833	$653,833	$ 0	$71,000,000

Project description:
The purpose of this project is to procure additional transit vehicles.

Project justification:
This procurement is planned for 30 cars beyond those which are to be funded within extensions budgets in the current procurement.

EXTENSIONS

PHASE 1 EXTENSIONS

TOTAL ESTIMATED COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$2,708,728,000	$275,054,400	$533,322,500	$1,900,351,100

Project description:
The purpose of this project is to expand the BART system to Dublin and Pleasanton; southern Alameda County; North Concord and West Pittsburg; Colma, other intermediate stations and San Francisco Airport. The project includes property acquisition; design and construction of fixed facilities; design, procurement and installation of systems elements; and purchase of vehicles.

Project justification:

- The state EIR for the Dublin/Pleasanton extension was completed in February 1990. Implementation is underway.
- The state EIR for the North Concord/West Pittsburg extension was completed in November 1988.
- The state EIR and preliminary engineering for the southern Alameda County extension are currently being conducted.
- The AA/DEIR/DEIS for the San Francisco extension began in 1990.
- Preliminary engineering for the Colma extension is underway with funds from a Section 9 grant.

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FISCAL YEAR 1993	Fiscal Yr. Need	BART Reserves	Fed STP	Fed CMAQ	FTA Sec. 3	FTA Sec. 9	FTA Other	Fed FEMA	State TCI	State Partner.	State 108	State Cypress	State FCR	St. Match TBD	Bridge Tolls	Measure C	STA	Other TBD
Safety & Security																		
Asbestos Abatement	678							678										0
Repl. Fire Alarms & Impr. Vent Fans	1,687					1,350									337			0
Subtotals	2,365	0	0	0	0	1,350	0	678	0	0	0	0	0	0	337	0	0	0
System Rehabilitation																		
Escalator & Elev. Rehab & Repl.	9,931					7,945									1,986			0
AFC Equipment Replacement	500		400											100				0
A/B Car Rehab	50,000	5,000			20,000						15,000				10,000			0
Subtotals	60,431	5,000	400	0	20,000	7,945	0	0	0	0	15,000	0	0	100	11,986	0	0	0
Service Improvements																		
ADA Compliance	2,000					898									100			1,002
W. Oakland Parking Expansion	3,200											3,200						0
Hayward Transit Center	1,142			914										228				(0)
Bayfair Trans. Ctr. Improvements	950			760										190				0
Auto. Itinerary Scheduler	375						375											0
Subtotals	7,667	0	0	1,674	0	898	375	0	0	0	0	3,200	0	418	100	0	0	1,002
Operational Efficiencies & Administration																		
Automated Cash Handling	85	85																0
Daly City Wheel Truing Machine	150	150																0
Capital Administration	2,620	2,620																0
SRTP	55						55											0
Subtotals	2,910	2,855	0	0	0	0	55	0	0	0	0	0	0	0	0	0	0	0
Extensions Related																		
Next Generation Control System	4,149		3,319											830				(0)
Replace Radio Network	6,600		5,280											1,320				0
Train Destination Control	820		656											164				0
A-Line Wayside Train Control	1,000		800											200				0
A-Line Traction Power	6,000		4,800											1,200				0
Oak. Airport Turnkey Specification	1,500		1,200											300				0
W. Contra Costa Ext. AA/EIR/EIS	2,500		2,000											500				0
Subtotals	22,569	0	18,055	0	0	0	0	0	0	0	0	0	0	4,514	0	0	0	(0)
FY93 TOTALS (not including extensions)	95,942	7,855	18,455	1,674	20,000	10,193	430	678	0	0	15,000	3,200	0	5,032	12,423	0	0	1,003
Phase I Extensions	See attached Phase I extension financial plans																	

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FISCAL YEAR 1994	Fiscal Yr. Need	BART Reserves	Fed STP	Fed CMAQ	FTA Sec. 3	FTA Sec. 9	FTA Other	Fed FEMA	State TCI	State Partner.	State 108	State Cypress	State FCR	St. Match TBD	Bridge Tolls	Measure C	STA	Other TBD
Safety & Security																		
TBT Cathodic Protection	465		372											93				0
Safety Improvements	12,253					2,000			250						250			9,753
Seismic Retrofits	18,855					2,000			250						250			16,355
Asbestos Abatement	4,464																	4,464
Subtotals	36,037	0	372	0	0	4,000	0	0	500	0	0	0	0	93	500	0	0	30,572
System Rehabilitation																		
AFC Equipment Replacement	11,300		9,040											2,260				0
Repl. AC & Muni Transfer Machines	240					192									48			0
Controls & Communications Rehab	3,483					2,786			348						348			(0)
Mainline Rehab	8,489					6,791			849						849			(0)
Stations Rehab	20,766					2,000			250						250			18,266
Shops & Yards Rehab	24,044					3,061			383						382			20,218
Work Equipment Replacement	671					537			67						67			(0)
A/B Car Rehab	35,000				20,000				5,000						10,000			0
Subtotals	103,993	0	9,040	0	20,000	15,367	0	0	6,897	0	0	0	0	2,260	11,944	0	0	38,484
Service Improvements																		
W. Oakland Parking Expansion	3,819																	3,819
Union City Parking Expansion	10,005																	10,005
Subtotals	13,824	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13,824
Operational Efficiencies & Administration																		
Daly City Wheel Truing Machine	2,450																	2,450
Repairable Components	2,600	2,600																0
SRTP	55						55											0
Subtotals	5,105	2,600	0	0	0	0	55	0	0	0	0	0	0	0	0	0	0	2,450
Extensions Related																		
Next Generation Control System	5,522		4,418											1,104				(0)
Replace Radio Network	15,000		12,000											3,000				0
Train Destination Control	3,000		2,400											600				0
A-Line Wayside Train Control	9,887		7,910											1,977				(0)
A-Line Traction Power	26,137		20,910											5,227				(0)
Subtotals	59,546	0	47,637	0	0	0	0	0	0	0	0	0	0	11,909	0	0	0	(0)
FY94 TOTALS (not including extensions)	218,505	2,600	57,049	0	20,000	19,367	55	0	7,397	0	0	0	0	14,262	12,444	0	0	85,330
Phase I Extensions	See attached Phase I extensions financial plans																	

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FISCAL YEAR 1995	Fiscal Yr. Need	BART Reserves	Fed STP	Fed CMAQ	FTA Sec. 3	FTA Sec. 9	FTA Other	Fed FEMA	State TCI	State Partner.	State 108	State Cypress	State FCR	St. Match TBD	Bridge Tolls	Measure C	STA	Other TBD
Safety & Security																		
TBT Cathodic Protection	1,200		960											240				0
Safety Improvements	5,243					4,194			524						524			(0)
Seismic Retrofits	40,521					2,000			250						250			38,021
Subtotals	46,964	0	960	0	0	6,194	0	0	774	0	0	0	0	240	774	0	0	38,021
System Rehabilitation																		
AFC Equipment Replacement	17,600		14,080											3,520				0
Controls & Communications Rehab	1,785					1,428			179						179			0
Mainline Rehab	4,594					3,675			459						459			(0)
Stations Rehab	6,937					5,550			694						694			(0)
Shops & Yards Rehab	11,221					4,000			500						500			6,221
Work Equipment Replacement	626					501			63						63			(0)
A/B Car Rehab	70,000	10,000			30,000				20,000						10,000			0
Subtotals	112,763	10,000	14,080	0	30,000	15,154	0	0	21,894	0	0	0	0	3,520	11,894	0	0	6,221
Service Improvements																		
Union City Transit Center	2,670																	2,670
Fruitvale Parking Expansion	10,512																	10,512
Subtotals	13,182	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13,182
Operational Efficiencies & Administration																		
SRTP	55						55											0
Subtotals	55	0	0	0	0	0	55	0	0	0	0	0	0	0	0	0	0	0
Extensions Related																		
Next Generation Control System	5,881		4,705											1,176				(0)
Replace Radio Network	7,350		5,880											1,470				0
Train Destination Control	707		566											141				(0)
Subtotals	13,938	0	11,150	0	0	0	0	0	0	0	0	0	0	2,788	0	0	0	(0)
FY95 TOTALS (not including extensions)	186,902	10,000	26,190	0	30,000	21,348	55	0	22,669	0	0	0	0	6,548	12,669	0	0	57,424
Phase I Extensions	See attached Phase I extensions financial plans																	

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FISCAL YEAR 1996	Fiscal Yr. Need	BART Reserves	Fed STP	Fed CMAQ	FTA Sec. 3	FTA Sec. 9	FTA Other	Fed FEMA	State TCI	State Partner.	State 108	State Cypress	State FCR	St. Match TBD	Bridge Tolls	Measure C	STA	Other TBD
Safety & Security																		
Safety Improvements	85					68			9						9			0
Seismic Retrofits	17,142					3,000			375						375			13,392
Subtotals	17,227	0	0	0	0	3,068	0	0	384	0	0	0	0	0	384	0	0	13,392
System Rehabilitation																		
AFC Equipment Replacement	7,210		5,768											1,442				0
Controls & Communications Rehab	2,755					2,204			276						276			0
Mainline Rehab	4,643					3,714			464						464			(0)
Stations Rehab	4,699					3,759			470						470			(0)
Shops & Yards Rehab	3,018					2,414			302						302			(0)
Work Equipment Replacement	2,919					2,335			292						292			(0)
A/B Car Rehab	60,000	10,000			20,000				20,000						10,000			0
Subtotals	85,244	10,000	5,768	0	20,000	14,427	0	0	21,803	0	0	0	0	1,442	11,803	0	0	(0)
Service Improvements																		
Station Entrance Canopies	1,000																	1,000
Alameda Park/Ride	429																	429
El Cerrito Access Improvements	12,500															5,500		7,000
Fruitvale Transit Center	4,645																	4,645
Rockridge Parking Expansion	7,754																	7,754
Subtotals	26,328	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,500	0	20,828
Operational Efficiencies & Administration																		
SRTP	55						55											0
New Administration Building	60,000																	60,000
Subtotals	60,055	0	0	0	0	0	55	0	0	0	0	0	0	0	0	0	0	60,000
Extensions Related																		
Next Generation Central Control	2,050		1,640											410				0
M-Line Traction Power	29,050																	29,050
C-Line Traction Power	24,150																	24,150
New Transit Vehicles	66,597																	66,597
Subtotals	121,847	0	1,640	0	0	0	0	0	0	0	0	0	0	410	0	0	0	119,797
FY96 TOTALS (not including extensions)	310,701	10,000	7,408	0	20,000	17,495	55	0	22,187	0	0	0	0	1,852	12,187	5,500	0	214,017
Phase I Extensions	See attached Phase I extension financial plans																	

DRAFT FY93 MTC SUBMITTAL—BART TEN-YEAR CAPITAL FINANCIAL PLAN Page 5 all figures in thousands of dollars July 1, 1992

FISCAL YEAR 1997	Fiscal Yr. Need	BART Reserves	Fed STP	Fed CMAQ	FTA Sec. 3	FTA Sec. 9	FTA Other	Fed FEMA	State TCI	State Partner.	State 108	State Cypress	State FCR	St. Match TBD	Bridge Tolls	Measure C	STA	Other TBD
Safety & Security																		
Safety Improvements	75					60			8						8			0
Seismic Retrofits	17,000					3,000			375						375			13,250
Subtotals	17,075	0	0	0	0	3,060	0	0	383	0	0	0	0	0	383	0	0	13,250
System Rehabilitation																		
AFC Equipment Replacement	13,390		10,712											2,678				0
Controls & Communications Rehab	44					35			4						4			(0)
Mainline Rehab	9,620					7,696			962						962			0
Stations Rehab	5,388					4,310			539						539			(0)
Shops & Yards Rehab	936					749			94						94			(0)
Work Equipment Replacement	1,673					1,338			167						167			(0)
A/B Car Rehab	60,000	10,000			20,000				20,000						10,000			0
Subtotals	91,051	10,000	10,712	0	20,000	14,129	0	0	21,766	0	0	0	0	2,678	11,766	0	0	(0)
Service Improvements																		
Station Entrance Canopies	5,400																	5,400
Subtotals	5,400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,400
Operational Efficiencies & Administration																		
SRTP	55						55											0
Subtotals	55	0	0	0	0	0	55	0	0	0	0	0	0	0	0	0	0	0
Extensions Related																		
M-Line Traction Power	53,950																	53,950
C-Line Traction Power	43,051																	43,051
New Transit Vehicles	4,403																	4,403
Subtotals	101,404	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	101,404
FY97 TOTALS (not including extensions)	214,985	10,000	10,712	0	20,000	17,189	55	0	22,149	0	0	0	0	2,678	12,149	0	0	120,054
Phase I Extensions	See attached Phase I extension financial plans																	

DRAFT FY93 MTC SUBMITTAL——BART TEN-YEAR CAPITAL FINANCIAL PLAN all figures in thousands of dollars July 1, 1992

FISCAL YEARS 1998-2002	Five Yr. Need	BART Reserves	Fed STP	Fed CMAQ	FTA Sec. 3	FTA Sec. 9	FTA Other	Fed FEMA	State TCI	State Partner.	State 108	State Cypress	State FCR	St. Match TBD	Bridge Tolls	Measure C	STA	Other TBD
Safety & Security																		
Safety Improvements	2,849					2,279			285						285			(0)
Seismic Retrofits	85,000												15,000					70,000
Subtotals	87,849	0	0	0	0	2,279	0	0	285	0	0	0	15,000	0	285	0	0	70,000
System Rehabilitation																		
Controls & Communications Rehab	0																	0
Mainline Rehab	25,485					20,388			2,549						2,549			0
Stations Rehab	6,760					5,408			676						676			0
Shops & Yards Rehab	2,151					1,721			215						215			(0)
Work Equipment Rehab	11,001					8,801			1,100						1,100			(0)
A/B Car Rehab	179,400	29,900			59,800				59,800						29,900			0
Subtotals	224,797	29,900	0	0	59,800	36,318	0	0	64,340	0	0	0	0	0	34,440	0	0	(0)
Service Improvements																		
Station Entrance Canopies	20,600																	20,600
Subtotals	20,600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20,600
Operational Efficiencies & Administration																		
SRTP	275						55											220
Subtotals	275	0	0	0	0	0	55	0	0	0	0	0	0	0	0	0	0	220
Extensions Related																		
C-Line Traction Power	1,799		1,439											360				(0)
Subtotals	1,799	0	1,439	0	0	0	0	0	0	0	0	0	0	360	0	0	0	(0)
FY98-02 TOTALS (not including extens.)	335,320	29,900	1,439	0	59,800	38,597	55	0	64,625	0	0	0	15,000	360	34,725	0	0	90,820
Phase I Extensions	See attached Phase I extension financial plans																	
TEN YEAR GRAND TOTALS	1,362,355	70,355	121,254	1,674	169,800	124,189	705	678	139,026	0	15,000	3,200	15,000	30,732	96,596	5,500	0	568,648
not including extensions																		

Run date: 14-Feb-92
Version 28 Revised

DUBLIN/PLEASANTON EXTENSION (DPX)
CASH FLOW SCHEDULE
($000s)

FUND TRANSFER AGREEMENT AMOUNTS Source	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Project Total
PROGRAMMED																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	0	0	2447	19481	1530	0	0	0	0	0	0	0	0	23458
State TCI-TP&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	38464	59536	0	0	24159	0	0	0	0	0	0	122159
Prop 116 Rail Bonds	0	0	0	0	0	0	0	61000	0	0	0	0	0	0	0	0	0	61000
Bridge Tolls	0	0	0	0	0	0	5799	5799	4710	4710	4710	0	0	0	0	0	0	25727
Alameda	0	0	0	0	0	0	10000	30000	40000	75000	15000	0	0	0	0	0	0	170000
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	46720	0	0	0	0	0	0	0	0	0	0	46720
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	103429	175816	46240	79710	43869	0	0	0	0	0	0	449064
EXISTING																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	2826	0	2459	1563	0	0	0	0	0	0	0	0	0	0	0	6848
State TCI-TP&D	0	0	0	6832	0	652	0	0	0	0	0	0	0	0	0	0	0	7484
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	3924	0	12863	0	0	0	0	0	0	0	0	0	0	0	16787
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	6280	0	0	0	0	0	0	0	0	0	0	0	0	6280
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	65	472	80	825	2971	6958	10587	0	0	0	0	0	0	0	0	0	0	21958
Property BART	2383	11017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13400
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	2448	11489	2906	11581	11710	22036	10587	0	0	0	0	0	0	0	0	0	0	72758
TOTAL																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	2826	0	2459	1563	2447	19481	1530	0	0	0	0	0	0	0	0	30306
State TCI-TP&D	0	0	0	6832	0	652	0	0	0	0	0	0	0	0	0	0	0	7484
Prop 108 Rail Bonds	0	0	0	0	0	0	38464	59536	0	0	24159	0	0	0	0	0	0	122159
Prop 116 Rail Bonds	0	0	0	0	0	0	0	61000	0	0	0	0	0	0	0	0	0	61000
Bridge Tolls	0	0	0	3924	0	12863	5799	5799	4710	4710	4710	0	0	0	0	0	0	42515
Alameda	0	0	0	0	0	0	10000	30000	40000	75000	15000	0	0	0	0	0	0	170000
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	6280	0	46720	0	0	0	0	0	0	0	0	0	0	53000
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	65	472	80	825	2971	6958	10587	0	0	0	0	0	0	0	0	0	0	21958
Property BART	2383	11017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13400
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLUMN TOTALS	2448	11489	2906	11581	11710	22036	114017	175816	46240	79710	43869	0	0	0	0	0	0	521822

EXPENSES DUBLIN/PLEASANTON EXTENSION (DPX) ($000s)

Source	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Project Total
PROGRAMMED																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	0	0	2447	0	21011	0	0	0	0	0	0	0	0	23458
State TCI-TP&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	15538	55383	27079	0	24159	0	0	0	0	0	0	122159
Prop 116 Rail Bonds	0	0	0	0	0	0	0	944	23271	36785	0	0	0	0	0	0	0	61000
Bridge Tolls	0	0	0	0	0	0	0	0	0	13773	8312	18	0	0	0	0	0	22104
Alameda	0	0	0	0	0	0	8320	28253	39916	75689	17822	0	0	0	0	0	0	170000
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	0	14449	27230	5041	0	0	0	0	0	0	0	46720
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	26305	99028	138507	131289	50293	18	0	0	0	0	0	445440
EXISTING																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	80	825	2968	1412	1563	0	0	0	0	0	0	0	0	0	0	6848
State TCI-TP&D	0	0	0	0	0	5544	1940	0	0	0	0	0	0	0	0	0	0	7484
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	2160	13631	0	0	0	0	0	0	0	0	0	15791
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	2062	0	4218	0	0	0	0	0	0	0	0	6280
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	65	472	80	825	2971	6958	10587	0	0	0	0	0	0	0	0	0	0	21958
Property BART	2383	11017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13400
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	2448	11489	160	1650	5939	13914	18312	13631	4218	0	0	0	0	0	0	0	0	71761
TOTAL																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	80	825	2968	1412	4010	0	21011	0	0	0	0	0	0	0	0	30306
State TCI-TP&D	0	0	0	0	0	5544	1940	0	0	0	0	0	0	0	0	0	0	7484
Prop 108 Rail Bonds	0	0	0	0	0	0	15538	55383	27079	0	24159	0	0	0	0	0	0	122159
Prop 116 Rail Bonds	0	0	0	0	0	0	0	944	23271	36785	0	0	0	0	0	0	0	61000
Bridge Tolls	0	0	0	0	0	0	2160	13631	0	13773	8312	18	0	0	0	0	0	37894
Alameda	0	0	0	0	0	0	8320	28253	39916	75689	17822	0	0	0	0	0	0	170000
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	2062	14449	31448	5041	0	0	0	0	0	0	0	53000
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	65	472	80	825	2971	6958	10587	0	0	0	0	0	0	0	0	0	0	21958
Property BART	2383	11017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13400
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLUMN TOTALS	2448	11489	160	1650	5939	13914	44617	112659	142725	131289	50293	18	0	0	0	0	0	517201

DUBLIN/PLEASANTON EXTENSION (DPX) ($000s)

EXCESS/SHORTFALL Source	Revised Prior	FY'87	(CUM) FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02
PROGRAMMED																	
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	0	0	0	19481	0	0	0	0	0	0	0	0	0
State TCI-TP&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	22926	27079	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	60056	36785	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	5799	11572	16257	7169	3317	3299	3299	3299	3299	3299	3299
Alameda	0	0	0	0	0	0	1680	3428	3511	2822	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	46720	32271	5041	0	0	0	0	0	0	0	0
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	77125	153887	61595	9991	3317	3299	3299	3299	3299	3299	3299
EXISTING																	
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	2746	1921	1412	1563	0	0	0	0	0	0	0	0	0	0	0
State TCI-TP&D	0	0	0	6832	6832	1940	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	3924	3924	16787	14602	971	971	971	971	971	971	971	971	971	971
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	6280	6280	4218	4218	0	0	0	0	0	0	0	0	0
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	2746	12677	18448	26570	18820	5189	971	971	971	971	971	971	971	971	971
TOTAL																	
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	2746	1921	1412	1563	0	19481	0	0	0	0	0	0	0	0	0
State TCI-TP&D	0	0	0	6832	6832	1940	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	22926	27079	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	60056	36785	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	3924	3924	16787	20401	12544	17229	8140	4288	4270	4270	4270	4270	4270	4270
Alameda	0	0	0	0	0	0	1680	3428	3511	2822	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	6280	6280	50938	36489	5041	0	0	0	0	0	0	0	0
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLUMN TOTALS	0	0	2746	12677	18448	26570	95945	159077	62567	10963	4288	4270	4270	4270	4270	4270	4270
CPP Interest Payment Reserves-Bridge Toll	0	0	0	0	0	0	25	25	25	25	250	0	0	0	0	0	0
Avg Financing Need/Mo	0	0	0	0	0	0	0	0	0	0	4042	0	0	0	0	0	0
Annual Finance Costs	0	0	0	0	0	0	0	0	0	0	243	0	0	0	0	0	0

DUBLIN/PLEASANTON EXTENSION (DPX)
CASH FLOW SCHEDULE
($000s)

Run date: 14-Feb-92
Version 28

EXPENDITURES BY TASK - ESCALATED   Data date: 06/30/91

	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Total
Enviro & Liasion	219	106	83	0	27	322	105	742	228	13980	10645	0	0	0	0	0	0	26457
PE & Eng	0	0	33	1488	5556	7910	26503	9164	6779	6986	6918	18	0	0	0	0	0	71355
ROW & Agreements	2229	11383	44	162	356	5681	9604	418	0	0	0	0	0	0	0	0	0	29877
Procur & Const	0	0	0	0	0	0	6551	95019	114801	85028	19612	0	0	0	0	0	0	321011
Vehicles	0	0	0	0	0	0	1854	7316	20917	25295	13118	0	0	0	0	0	0	68500
Total	2448	11489	160	1650	5939	13913	44617	112659	142725	131289	50293	18	0	0	0	0	0	517200
Financing Costs	0	0	0	0	0	0	0	0	0	0	243	0	0	0	0	0	0	243
Grand Total	2448	11489	160	1650	5939	13913	44617	112659	142725	131289	50536	18	0	0	0	0	0	517443

Run date: 04-Dec-91
Version 28

PITTSBURG/ANTIOCH EXTENSION (PAX)
CASH FLOW SCHEDULE
($000s)

FUND TRANSFER AGREEMENT AMOUNTS Source	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Project Total
UNFUNDED																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	0	0	0	12589	6696	0	0	0	0	0	0	0	0	19285
State TCI-TP&D	0	0	0	0	0	0	4729	0	0	18087	0	0	0	0	0	0	0	22816
Prop 108 Rail Bonds	0	0	0	0	0	0	23800	11200	0	0	0	0	0	0	0	0	0	35000
Prop 116 Rail Bonds	0	0	0	0	0	0	35500	0	0	0	0	0	0	0	0	0	0	35500
Bridge Tolls	0	0	0	0	0	0	3435	3435	2790	2790	2790	2790	2790	2790	2790	2790	8210	37400
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	46854	63097	22110	4862	0	0	0	0	0	0	0	136923
SamTrans BART Buy-In	0	0	0	0	0	0	33480	0	0	0	34274	11400	3468	0	0	0	7188	89810
SFO Ext Fund Transfer	0	0	0	0	0	0	0	1749	5028	6226	8841	6745	7476	4675	3247	691	0	44677
Cash BART	0	0	0	0	0	0	17337	0	0	0	0	0	0	0	0	0	0	17337
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	165135	92070	36624	31965	45905	20935	13734	7465	6037	3481	15398	438748
FUNDED																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	3674	5547	2038	3794	0	0	0	0	0	0	0	0	0	0	0	15053
State TCI-TP&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	2325	0	7620	0	0	0	0	0	0	0	0	0	0	0	9945
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	14400	0	0	0	0	0	0	0	0	0	0	0	14400
SamTrans BART Buy-In	0	0	0	0	3720	0	0	0	0	0	0	0	0	0	0	0	0	3720
SFO Ext Fund Transfer	0	0	0	0	0	157	551	505	0	0	0	0	0	0	0	0	0	1213
Cash BART	0	193	66	241	2902	4945	11434	0	0	0	0	0	0	0	0	0	0	19781
Property BART	2832	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2882
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	2832	243	3740	8113	8660	30916	11985	505	0	0	0	0	0	0	0	0	0	66994
TOTAL																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	3674	5547	2038	3794	0	12589	6696	0	0	0	0	0	0	0	0	34338
State TCI-TP&D	0	0	0	0	0	0	4729	0	0	18087	0	0	0	0	0	0	0	22816
Prop 108 Rail Bonds	0	0	0	0	0	0	23800	11200	0	0	0	0	0	0	0	0	0	35000
Prop 116 Rail Bonds	0	0	0	0	0	0	35500	0	0	0	0	0	0	0	0	0	0	35500
Bridge Tolls	0	0	0	2325	0	7620	3435	3435	2790	2790	2790	2790	2790	2790	2790	2790	8210	47345
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	14400	46854	63097	22110	4862	0	0	0	0	0	0	0	151323
SamTrans BART Buy-In	0	0	0	0	3720	0	33480	0	0	0	34274	11400	3468	0	0	0	7188	93530
SFO Ext Fund Transfer	0	0	0	0	0	157	551	2254	5028	6226	8841	6745	7476	4675	3247	691	0	45890
Cash BART	0	193	66	241	2902	4945	28771	0	0	0	0	0	0	0	0	0	0	37118
Property BART	2832	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2882
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLUMN TOTALS	2832	243	3740	8113	8660	30916	177120	92575	36624	31965	45905	20935	13734	7465	6037	3481	15398	505742

PITTSBURG/ANTIOCH ($000s)

EXPENSES Source	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Project Total
UNFUNDED																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	0	0	0	12589	6696	0	0	0	0	0	0	0	0	19285
State TCI-TP&D	0	0	0	0	0	0	4729	0	0	11106	6982	0	0	0	0	0	0	22816
Prop 108 Rail Bonds	0	0	0	0	0	0	23800	7389	3811	0	0	0	0	0	0	0	0	35000
Prop 116 Rail Bonds	0	0	0	0	0	0	8327	27173	0	0	0	0	0	0	0	0	0	35500
Bridge Tolls	0	0	0	0	0	0	0	0	4951	1499	8032	0	0	0	0	0	0	14483
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	23800	45662	62599	4862	0	0	0	0	0	0	0	136923
SamTrans BART Buy-In	0	0	0	0	0	0	0	0	33480	49349	6982	0	0	0	0	0	0	89810
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	6777	30585	7315	0	0	0	0	0	0	44677
Cash BART	0	0	0	0	0	0	0	0	13921	3416	0	0	0	0	0	0	0	17337
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	18280	4662	0	0	0	0	0	22942
Sub-total	0	0	0	0	0	0	60656	92813	132235	100816	47591	4662	0	0	0	0	0	438773
FUNDED																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	66	241	2901	4681	7164	0	0	0	0	0	0	0	0	0	0	15053
State TCI-TP&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	9920	0	0	0	0	0	0	0	0	9920
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	263	8787	5350	0	0	0	0	0	0	0	0	0	14400
SamTrans BART Buy-In	0	0	0	0	0	0	0	1681	2039	0	0	0	0	0	0	0	0	3720
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	1213	0	0	0	0	0	0	0	0	1213
Cash BART	0	193	66	241	2902	4945	11434	0	0	0	0	0	0	0	0	0	0	19781
Property BART	2832	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2882
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	2832	243	132	482	5803	9889	27385	7031	13172	0	0	0	0	0	0	0	0	66969
TOTAL																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	66	241	2901	4681	7164	12589	6696	0	0	0	0	0	0	0	0	34338
State TCI-TP&D	0	0	0	0	0	0	4729	0	0	11106	6982	0	0	0	0	0	0	22816
Prop 108 Rail Bonds	0	0	0	0	0	0	23800	7389	3811	0	0	0	0	0	0	0	0	35000
Prop 116 Rail Bonds	0	0	0	0	0	0	8327	27173	0	0	0	0	0	0	0	0	0	35500
Bridge Tolls	0	0	0	0	0	0	0	0	14871	1499	8032	0	0	0	0	0	0	24402
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	263	32587	51012	62599	4862	0	0	0	0	0	0	0	151323
SamTrans BART Buy-In	0	0	0	0	0	0	0	1681	35519	49349	6982	0	0	0	0	0	0	93530
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	7990	30585	7315	0	0	0	0	0	0	45890
Cash BART	0	193	66	241	2902	4945	11434	0	13921	3416	0	0	0	0	0	0	0	37118
Property BART	2832	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2882
Other	0	0	0	0	0	0	0	0	0	0	18280	4662	0	0	0	0	0	22942
COLUMN TOTALS	2832	243	132	482	5803	9889	88041	99844	145407	100816	47591	4662	0	0	0	0	0	505742

EXCESS/SHORTFALL PITTSBURG/ANTIOCH ($000s)

Source	Prior	FY'87	(CUM) FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02
UNFUNDED																	
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-TP&D	0	0	0	0	0	0	0	0	0	6982	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	0	3811	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	27173	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	3435	6845	4658	3250	-5803	-6888	-7463	-7623	-7513	-7208	-678
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	23054	40489	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	33480	33480	0	-49349	-22056	-10656	-7188	-7188	-7188	-7188	0
SFO Ext Fund Transfer	0	0	0	0	0	0	0	1749	0	-24359	-22833	-16088	-8612	-3937	-691	0	0
Cash BART	0	0	0	0	0	0	17337	17337	3416	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	-18280	-22942	-22942	-22942	-22942	-22942	-22942
Sub-total	0	0	0	0	0	0	104479	103711	8075	-63476	-68972	-56574	-46205	-41690	-38334	-37338	-23620
FUNDED																	
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	3608	8914	8051	7164	0	0	0	0	0	0	0	0	0	0	0
State TCI-TP&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	2325	2325	9945	9920	9920	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	14137	5350	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	3720	3720	3720	2039	0	0	0	0	0	0	0	0	0
SFO Ext Fund Transfer	0	0	0	0	0	157	708	1213	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	3608	11239	14096	35123	19698	13172	0	0	0	0	0	0	0	0	0
TOTAL																	
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	3608	8914	8051	7164	0	0	0	0	0	0	0	0	0	0	0
State TCI-TP&D	0	0	0	0	0	0	0	0	0	6982	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	0	3811	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	27173	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	2325	2325	9945	13355	16765	4658	3250	-5803	-6888	-7463	-7623	-7513	-7208	-678
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	14137	28404	40489	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	3720	3720	37200	35519	0	-49349	-22056	-10656	-7188	-7188	-7188	-7188	0
SFO Ext Fund Transfer	0	0	0	0	0	157	708	2962	0	-24359	-22833	-16088	-8612	-3937	-691	0	0
Cash BART	0	0	0	0	0	0	17337	17337	3416	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	-18280	-22942	-22942	-22942	-22942	-22942	-22942
COLUMN TOTALS	0	0	3608	11239	14096	35123	124177	116883	8075	-63476	-68972	-56574	-46205	-41690	-38334	-37338	-23620
CPP Interest Payment Reserves-Bridge Toll	0	0	0	0	0	0	25	25	25	2700	3810	3875	3365	2950	2680	2485	1680
Avg Financing Need/Mo	0	0	0	0	0	0	0	0	0	44342	63469	64565	56021	49145	44614	41373	30134
Annual Finance Costs	0	0	0	0	0	0	0	0	0	2661	3808	3874	3361	2949	2677	2482	1808

PITTSBURG/ANTIOCH EXTENSION (PAX)
CASH FLOW SCHEDULE

Run date: 04-Dec-91
Version 28

EXPENDITURES BY TASK - ESCALATED   Data date: 06/30/91

	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Total
Enviro & Liaison	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PE & Eng	0	0	100	424	5028	8900	17310	10099	6488	6487	6714	3192	0	0	0	0	0	64742
ROW & Agreements	2832	243	32	58	775	989	58071	0	0	0	0	0	0	0	0	0	0	63000
Procur & Const	0	0	0	0	0	0	11813	86383	131298	84122	26914	1470	0	0	0	0	0	342000
Vehicles	0	0	0	0	0	0	847	3362	7621	10207	13963	0	0	0	0	0	0	36000
Total	2832	243	132	482	5803	9889	88041	99844	145407	100816	47591	4662	0	0	0	0	0	505742
Financing Costs	0	0	0	0	0	0	0	0	0	2661	3808	3874	3361	2949	2677	2482	1808	23620
Grand Total	2832	243	132	482	5803	9889	88041	99844	145407	103477	51399	8536	3361	2949	2677	2482	1808	529362

WARM SPRINGS EXTENSION (WSX)
CASH FLOW SCHEDULE
($000s)

un date: 05-Dec-91
ersion 28

UND TRANSFER AGREEMENT AMOUNTS ource	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Project TOTAL
ROGRAMMED																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	3869	2035	808	0	800	12540	2277	0	0	0	0	0	0	0	22329
State TCI-TP&D	0	0	0	0	0	0	0	0	0	0	0	0	39000	11000	0	0	0	50000
Prop 108 Rail Bonds	0	0	0	0	0	0	0	29000	0	0	0	0	0	0	0	0	0	29000
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	4710	4710	4710	4710	4710	18087	41637
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	9800	0	0	0	57860	19244	5854	0	0	0	12135	104893
SFO Ext Fund Transfer	0	0	0	0	0	0	0	2952	8488	10511	14924	11387	12622	7892	5482	1166	0	75424
Cash BART	0	0	0	0	0	0	26316	0	0	0	0	0	0	0	0	0	0	26316
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0-	0	0	0	0	0
Sub-total	0	0	0	3869	2035	808	36116	32752	21028	12788	72784	35341	62186	23602	10192	5876	30222	349599
XISTING																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	4395	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4395
State TCI-TP&D	0	0	0	0	0	1632	0	0	0	0	0	0	0	0	0	0	0	1632
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SFO Ext Fund Transfer	0	0	0	0	84	180	930	853	0	0	0	0	0	0	0	0	0	2047
Cash BART	199	98	479	307	2052	1269	2440	0	0	0	0	0	0	0	0	0	0	6844
Property BART	2737	9688	4415	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16840
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	2936	9786	9289	307	2136	3081	3370	853	0	0	0	0	0	0	0	0	0	31758
TOTAL																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	4395	3869	2035	808	0	800	12540	2277	0	0	0	0	0	0	0	26724
State TCI-TP&D	0	0	0	0	0	1632	0	0	0	0	0	0	39000	11000	0	0	0	51632
Prop 108 Rail Bonds	0	0	0	0	0	0	0	29000	0	0	0	0	0	0	0	0	0	29000
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	4710	4710	4710	4710	4710	18087	41637
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	9800	0	0	0	57860	19244	5854	0	0	0	12135	104893
SFO Ext Fund Transfer	0	0	0	0	84	180	930	3805	8488	10511	14924	11387	12622	7892	5482	1166	0	77471
Cash BART	199	98	479	307	2052	1269	28756	0	0	0	0	0	0	0	0	0	0	33160
Property BART	2737	9688	4415	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16840
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLUMN TOTALS	2936	9786	9289	4176	4171	3889	39486	33605	21028	12788	72784	35341	62186	23602	10192	5876	30222	381357

WARM SPRINGS EXTENSION (WSX) ($000s)

EXPENSES Source	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Project TOTAL
PROGRAMMED																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	0	0	6712	15617	0	0	0	0	0	0	0	0	0	22329
State TCI-TP&D	0	0	0	0	0	0	0	0	0	0	20198	21530	6858	1414	0	0	0	50000
Prop 108 Rail Bonds	0	0	0	0	0	0	0	29000	0	0	0	0	0	0	0	0	0	29000
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	41637	0	0	0	0	0	0	41637
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	3062	46472	43224	0	0	3863	6857	1415	0	0	0	104893
SFO Ext Fund Transfer	0	0	0	0	0	0	0	9186	5509	42949	113	17667	0	0	0	0	0	75424
Cash BART	0	0	0	0	0	0	15908	0	0	0	10408	0	0	0	0	0	0	26316
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	115884	43544	0	0	0	0	0	0	159428
Sub-total	0	0	0	0	0	0	25682	100275	48733	158033	115900	43060	13715	2829	0	0	0	509027
EXISTING																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	2051	1978	366	0	0	0	0	0	0	0	0	0	0	4395
State TCI-TP&D	0	0	0	0	0	0	1632	0	0	0	0	0	0	0	0	0	0	1632
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SFO Ext Fund Transfer	0	0	0	0	0	0	264	930	853	0	0	0	0	0	0	0	0	2047
Cash BART	199	98	479	307	2052	1269	2440	0	0	0	0	0	0	0	0	0	0	6844
Property BART	2737	9688	4415	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16840
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	2936	9786	4894	307	4103	3247	4702	930	853	0	0	0	0	0	0	0	0	31750
TOTAL																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	2051	1978	7078	15617	0	0	0	0	0	0	0	0	0	26724
State TCI-TP&D	0	0	0	0	0	0	1632	0	0	0	20198	21530	6858	1414	0	0	0	51632
Prop 108 Rail Bonds	0	0	0	0	0	0	0	29000	0	0	0	0	0	0	0	0	0	29000
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	41637	0	0	0	0	0	0	41637
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	3062	46472	43224	0	0	3863	6857	1415	0	0	0	104893
SFO Ext Fund Transfer	0	0	0	0	0	0	264	10116	6362	42949	113	17667	0	0	0	0	0	77471
Cash BART	199	98	479	307	2052	1269	18348	0	0	0	10408	0	0	0	0	0	0	33160
Property BART	2737	9688	4415	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16840
Other	0	0	0	0	0	0	0	0	0	115884	43544	0	0	0	0	0	0	159428
COLUMN TOTALS	2936	9786	4894	307	4103	3247	30384	101205	49586	158033	115900	43060	13715	2829	0	0	0	540785

CESS/SHORTFALL			(CUM)						WARM SPRINGS EXTENSION (WSX)			($000s)					
urce	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02
OGRAMMED																	
MTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
tate TCI-Art XIX	0	0	0	3869	5904	6712	0	-14817	-2277	0	0	0	0	0	0	0	0
tate TCI-TP&D	0	0	0	0	0	0	0	0	0	0	-20198	-41728	-9586	0	0	0	0
rop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
rop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	-41637	-36927	-32217	-27507	-22797	-18087	0
lameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
amTrans BART Buy-In	0	0	0	0	0	0	6738	-39734	-82958	-82958	-25098	-9717	-10720	-12135	-12135	-12135	0
FO Ext Fund Transfer	0	0	0	0	0	0	0	-6234	-3255	-35693	-20882	-27162	-14540	-6648	-1166	0	0
ash BART	0	0	0	0	0	0	10408	10408	10408	10408	0	0	0	0	0	0	0
roperty BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ther	0	0	0	0	0	0	0	0	0	-115884	-159428	-159428	-159428	-159428	-159428	-159428	-159428
Sub-total	0	0	0	3869	5904	6712	17146	-50377	-78082	-224127	-267243	-274962	-226491	-205718	-195526	-189650	-159428
ISTING																	
MTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
tate TCI-Art XIX	0	0	4395	4395	2344	366	0	0	0	0	0	0	0	0	0	0	0
tate TCI-TP&D	0	0	0	0	0	1632	0	0	0	0	0	0	0	0	0	0	0
rop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
rop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
lameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
amTrans BART Buy-In	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SFO Ext Fund Transfer	0	0	0	0	84	264	930	853	0	0	0	0	0	0	0	0	0
ash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ther	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	4395	4395	2428	2262	930	853	0	0	0	0	0	0	0	0	0
TAL																	
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	4395	8264	8248	7078	0	-14817	-2277	0	0	0	0	0	0	0	0
State TCI-TP&D	0	0	0	0	0	1632	0	0	0	0	-20198	-41728	-9586	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	-41637	-36927	-32217	-27507	-22797	-18087	0
lameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	6738	-39734	-82958	-82958	-25098	-9717	-10720	-12135	-12135	-12135	0
SFO Ext Fund Transfer	0	0	0	0	84	264	930	-5381	-3255	-35693	-20882	-27162	-14540	-6648	-1166	0	0
Cash BART	0	0	0	0	0	0	10408	10408	10408	10408	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	-115884	-159428	-159428	-159428	-159428	-159428	-159428	-159428
COLUMN TOTALS	0	0	4395	8264	8332	8974	18076	-49524	-78082	-224127	-267243	-274962	-226491	-205718	-195526	-189650	-159428
P Interest Payment Reserves-Bridge Toll	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
g Financing Need/Mo	0	0	0	0	0	0	0	54664	61134	166751	285979	289803	269291	223305	202906	193074	179595
nual Finance Costs	0	0	0	0	0	0	0	3280	3668	10005	17159	17308	16157	13398	12174	11584	10776

WARM SPRINGS EXTENSION (WSX)
CASH FLOW SCHEDULE
($000s)

n date: 05-Dec-91
rsion 28

PENDITURES BY TASK - ESCALATED Data date: 06/30/91

	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	TOTAL
viro & Liaison	199	98	299	127	117	9	0	0	0	0	0	0	0	0	0	0	0	849
& Eng	0	0	0	0	3914	2397	11049	24870	5597	5940	5153	4782	4647	1171	0	0	0	69520
W & Agreements	2737	9688	4595	180	72	841	17386	70029	0	0	0	0	0	0	0	0	0	105528
ocur & Const	0	0	0	0	0	0	1871	6306	43989	126210	83786	36993	9068	1658	0	0	0	309081
hicles	0	0	0	0	0	0	78	0	0	26683	26961	1285	0	0	0	0	0	55007
Total	2936	9786	4894	307	4103	3247	30384	101205	49586	158833	115900	43060	13715	2829	0	0	0	540785

COLMA EXTENSION
Based on 3/88 Regional Plan
Escalated

Run date: 25-Nov-91

Version 28

	Escl Rate			0.04													
ALLOCATION PLAN	Yr Escl->	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Source	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	Prj Tot
UNFUNDED																	
UMTA 3	0	0	0	0	0	0	0	88968	0	0	0	0	0	0	0	0	88968
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI	0	0	0	0	0	0	4255	9392	319	0	0	0	0	0	0	0	13966
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	4255	98360	319	0	0	0	0	0	0	0	102934
FUNDED																	
UMTA 3	0	0	0	0	0	0	11653	0	0	0	0	0	0	0	0	0	11653
UMTA 9	0	0	0	3647	0	0	0	0	0	0	0	0	0	0	0	0	3647
State TCI	0	0	0	1091	2169	0	0	0	0	0	0	0	0	0	0	0	3260
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	17226	0		0	0	0	0	0	0	0	0	0	17226
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	4738	19395	0	11653	0	0	0	0	0	0	0	0	0	35786
TOTAL																	
UMTA 3	0	0	0	0	0	0	11653	88968	0	0	0	0	0	0	0	0	100621
UMTA 9	0	0	0	3647	0	0	0	0	0	0	0	0	0	0	0	0	3647
State TCI	0	0	0	1091	2169	0	4255	9392	319	0	0	0	0	0	0	0	17226
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	17226	0	0	0	0	0	0	0	0	0	0	0	17226
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total																	
COLUMN TOTALS	0	0	0	4738	19395	0	15908	98360	319	0	0	0	0	0	0	0	138720

EXPENDITURES BY SOURCE

Source	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	Prj Tot
UNFUNDED																	
UMTA 3	0	0	0	0	0	0	8671	12535	43441	28836	7138	0	0	0	0	0	100621
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI	0	0	0	0	0	0	1445	2089	7240	4806	1190	0	0	0	0	0	16770
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	10116	14625	50681	33642	8327	0	0	0	0	0	117391
FUNDED																	0
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	469	2887	291	0	0	0	0	0	0	0	0	0	3647
State TCI	0	0	0	0	59	361	36	0	0	0	0	0	0	0	0	0	456
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	59	361	1482	2089	7240	4806	1190	0	0	0	0	0	17226
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	586	3609	1809	2089	7240	4806	1190	0	0	0	0	0	21329
TOTAL																	
UMTA 3	0	0	0	0	0	0	8671	12535	43441	28836	7138	0	0	0	0	0	100621
UMTA 9	0	0	0	0	469	2887	291	0	0	0	0	0	0	0	0	0	3647
State TCI	0	0	0	0	59	361	1481	2089	7240	4806	1190	0	0	0	0	0	17226
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	59	361	1482	2089	7240	4806	1190	0	0	0	0	0	17226
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total																	
COLUMN TOTALS	0	0	0	0	586	3609	11925	16714	57921	38448	9517	0	0	0	0	0	138720

EXPENDITURES BY TASK - ESCALATED Data dated 11/07/91

	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	Prj Tot
CSX																	
Enviro & Liason	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PE & Eng	0	0	0	0	586	3430	6937	3751	4496	3720	3260	0	0	0	0	0	26180
ROW & Agreements	0	0	0	0	0	179	3800	0	121	147	113	0	0	0	0	0	4360
Procur & Const	0	0	0	0	0	0	1188	12963	53304	34581	6144	0	0	0	0	0	108180
Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	586	3609	11925	16714	57921	38448	9517	0	0	0	0	0	138720

SAN FRANCISCO EXTENSION W/ OUT COLMA
Based on 09/90 STIP Adoption and MTC Resolution #1876.
Escalated

Run date:
04-Dec-91
Version 28

	Escl Rate			0.05														
ALLOCATION PLAN	Yr Escl->		0	0	0	1	2	3	4	5	6	7	8	9	10	11	12	
Source	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Prj Tot
UNFUNDED																		
UMTA 3	0	0	0	0	0	0	0	23821	37656	71589	135452	108788	120588	75397	52374	11144	0	636809
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI	0	0	0	0	0	0	0	3970	6276	11932	22575	18131	20098	12566	8729	1857	0	106135
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0	27791	43932	83521	158027	126920	140686	87963	61103	13002	0	742943
FUNDED																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	0	0	0	3970	6276	11932	22575	18131	20098	12566	8729	1857	0	106135
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0	3970	6276	11932	22575	18131	20098	12566	8729	1857	0	106135
TOTAL																		
UMTA 3	0	0	0	0	0	0	0	23821	37656	71589	135452	108788	120588	75397	52374	11144	0	636809
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI	0	0	0	0	0	0	0	3970	6276	11932	22575	18131	20098	12566	8729	1857	0	106135
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	0	0	0	3970	6276	11932	22575	18131	20098	12566	8729	1857	0	106135
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0	31761	50208	95452	180602	145051	160784	100529	69832	14859	0	849078

EXPENDITURES BY SOURCE

SAN FRANCISCO EXTENSION W/ OUT COLMA

Source	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Prj Tot
UNFUNDED																		
UMTA 3	0	0	0	0	0	0	0	23821	37656	71589	135452	108788	120588	75397	52374	11144	0	636809
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI	0	0	0	0	0	0	0	3970	6276	11932	22575	18131	20098	12566	8729	1857	0	106135
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0	27791	43932	83521	158027	126920	140686	87963	61103	13002	0	742943
FUNDED																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	0	0	0	3970	6276	11932	22575	18131	20098	12566	8729	1857	0	106135
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	0	3970	6276	11932	22575	18131	20098	12566	8729	1857	0	106135
TOTAL																		
UMTA 3	0	0	0	0	0	0	0	23821	37656	71589	135452	108788	120588	75397	52374	11144	0	636809
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI	0	0	0	0	0	0	0	3970	6276	11932	22575	18131	20098	12566	8729	1857	0	106135
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	0	0	0	3970	6276	11932	22575	18131	20098	12566	8729	1857	0	106135
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total																		
COLUMN TOTALS	0	0	0	0	0	0	0	31761	50208	95452	180602	145051	160784	100529	69832	14859	0	849078

EXPENDITURES BY TASK - ESCALATED

SAN FRANCISCO EXTENSION W/ OUT COLMA

Based on 4/13/88 schedule w/ 3/26/90 Vehicle Schedule. Inflation adjusted 10/90

	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Prj Tot
SFO eXcluding COLMA																		
Enviro & Liason	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PE & Eng	0	0	0	0	0	0	0	19445	21249	19220	12349	12651	13284	13948	14645	5791	0	132582
ROW & Agreements	0	0	0	0	0	0	0	12316	28959	0	0	0	0	0	0	0	0	41275
Procur & Const	0	0	0	0	0	0	0	0	0	31237	122357	131691	147500	86581	55187	9068	0	583621
Vehicles	0	0	0	0	0	0	0	0	0	44995	45896	709	0	0	0	0	0	91600
Total	0	0	0	0	0	0	0	31761	50208	95452	180602	145051	160784	100529	69832	14859	0	849078

REG
516
#64
1993-2002
Final

SAN FRANCISCO
BAY AREA RAPID TRANSIT DISTRICT

CAPITAL IMPROVEMENT PROGRAM
For Fiscal Years 1993-2002

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SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT

CAPITAL IMPROVEMENT PROGRAM

FISCAL YEARS 1993 - 2002

The preparation of this report has been financed in part through a grant from the United States Department of Transportation, Federal Transportation Administration under the Urban Mass Transportation Act of 1964, as amended and passed through the Metropolitan Transportation Commission. This report has been prepared in conformance with MTC guidelines for Short-Range Transit Plans as revised in March 1990.

The contents of this report reflect the views of BART which is responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the original views or policy of the U.S. Department of Transportation. This report does not constitute a standard, specification, or regulation.

All projects discussed are subject to state and federal environmental review as required by law. Specific projects and project funding are subject to approval by the BART Board of Directors. Projects that do not yet satisfy these requirements are proposed projects.

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SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT

BOARD OF DIRECTORS
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General Manager

December 21, 1992*

Bay Area Rapid Transit District
Executive Office of Budget and Project Management
800 Madison Street
Oakland, California 94607

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*Incorporates technical revisions made subsequent to publication dated 15 October 1992.

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SAN FRANCISCO
BAY AREA RAPID TRANSIT DISTRICT

FY 1993 - 2002 CAPITAL IMPROVEMENT PROGRAM

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CONTEXT OF THE PROGRAM

BART faces enormous challenges as it prepares to enter the 21st Century with this Capital Improvement Program. The District is committed to building a multi-billion dollar program of rail system extensions, while at the same time undertaking an unprecedented program of rehabilitating and upgrading the existing system -- all while maintaining and even improving the level of service provided.

AN AGING SYSTEM

BART is no longer a sparkling new system. The onset of aging makes it essential for BART to begin rebuilding before it experiences the declining spiral of effects that many older rail transit systems have experienced due to their inability to attend to preventative maintenance and rehabilitation in a timely manner. This is not glamorous, high-visibility work, and it can be very expensive. But it is essential, and in the long run, it is much more cost effective to rehabilitate systems before reaching the point of failure than to try to fix problems after they become obvious. This will also avoid future degradation of service and consequent loss of patronage and fare revenue.

BART must not only maintain its current level of service while undergoing both expansion and rebuilding, but also provide even higher levels of service to meet the needs of a growing market. This Capital Improvement Program reflects this need in identifying major rehabilitations for transit vehicles, train controls, stations, communications systems, maintenance facilities and other parts of the BART physical plant.

A GROWING SYSTEM

BART patronage has grown dramatically in the last decade, about 80 percent growth from a little under 140,000 trips on an average weekday in 1980 to over 250,000 daily in 1991. Patronage is expected to continue to grow in the future, and this will require additional facilities and capabilities. While BART invested heavily in increasing its people-carrying capacity over the last ten years, continued growth in patronage will require continued capacity expansion. This ten-year capital program calls for the addition of new rail cars and projects to reduce headways, both in order to carry more passengers.

The current capital program includes proposed improvements to increase patron parking and capacity to handle more feeder buses at the stations, along with more comfortable amenities for patrons who transfer to and from buses at BART stations. In addition, replacement of deteriorating farecard vending equipment, along with implementation of better interoperator fare mechanisms, will improve the flow of patrons through the stations, while providing increased customer convenience.

AN EXPANDING SYSTEM

For much of the last ten years, BART has been involved in detailed planning of extensions to the system, and in efforts to secure funding for building them. This current capital program envisions completion of extensions to Dublin-Pleasanton, Warm Springs, West Pittsburg, Colma, and San Francisco International Airport by the year 2002.

Operation of the extensions, together with a larger fleet running on shorter headways, and possibly with more complex operating plans, may require additional train turnback tracks and cross-over switches along the mainline, expansion of vehicle maintenance and storage facilities, increased inventory storage, more tools and equipment, and other operational and support facility improvements. Expanded support facilities to accommodate these needs are not reflected in this year's ten-year capital plan, as these issues are the subject of continuing analysis. As recommendations are developed through this analysis, additional projects along these lines can be expected in next year's capital program.

RELATIONSHIP TO PRIOR YEAR PROGRAMS:

Evolution of the System Rehabilitation and Core System Improvement Programs

Fiscal Year 1992 marked a major shift in the content and focus of BART's Capital Improvement Program, along with the process through which it is developed. This FY 1993 program reflects continuing refinement of the process and program. Prior to FY 1992, system rehabilitation was not a primary focal point of the program: until very recently, BART was generally perceived--both within and outside the organization---as a "new" transit system, not yet needing significant rebuilding. Over the last three years BART has made the transition from a five-year capital planning horizon to a full ten-year horizon bringing the need for system rehabilitation into much sharper focus.

Without an organizational focus on rehabilitation, individual project managers occasionally proposed specific projects to rehabilitate individual system components or subsystems, but these had not been organized into an integrated program. BART has moved aggressively in the last year to ensure that *all* foreseeable rehabilitation needs are identified *before* they approach the point of failure. The development of this comprehensive program has also led BART to prioritize projects according to criticality of the components/subsystems and the impact of their failure, since funding programmed by the region to be available to BART for rehabilitation is well below total system needs. Hard choices will have to be made about what work gets done and what does not. (See page 13 for a description of BART's project priority classifications.)

In addition, rehabilitation projects had not been viewed in the context of extensions to the core system. Viewing rehabilitation and extensions together as two parts of a whole has resulted in synergies of project programming efficiency. An excellent example of this is the need to extend the District's radio communications system to provide coverage to the geographic areas to be served by the extensions, along with needs to increase the number of communications channels on the existing network and rehabilitate or replace aging radio hardware. Taking all of these needs into account at the same time, as this current capital program does, results in dramatically better project approaches while reducing overall costs. There are several other similar cases.

FINANCIAL SUMMARY

The current ***unfunded*** BART ten year capital plan, *excluding the Phase 1 Extensions,* totals $1.4 billion, as shown on pages 14 and 15. Against this need the region has programmed approximately $144 million (although programming for some sources in some outyears has not yet been completed). In any event, the current regional program leaves a major shortfall, possibly as much as $1.2 billion. Clearly, efforts to increase the capital resource available to BART will be required. Additional summary and detailed tables are provided in the *Financial Plan* at the back of this document.

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Project Descriptions, Justifications and Budgets

Definitions of Project Priority Classifications

Priority	Definitions
1	Mandated by law or code, safety-critical, District assets jeopardized, or essential to ensure operation performance of the extensions lines.
2	System operations and patron service levels will be severely impacted, safety-sensitive, District assets at risk, operating costs will be severely impacted, or introduction of technological advancements which significantly improve operational performance or result in significant cost efficiencies.
3	Operating cost or performance levels will be affected, increased service levels or system improvements will be delayed, District goals will not be achieved.
4	Routine replacement of worn or obsolescent equipment or systems, desirable system improvements, or reduced maintenance costs.
5	Identified need, but no immediate or near-term future cost or service impact.

There is also a time element involved in project priorities. Priorities as identified in this program relate to needs *at this time*. Any rehabilitation, replacement or improvement not implemented according to scheduled need may rise in priority at a later date if deferred implementation increases the risk to operations, safety, or impact on operating costs.

Summary Table of Projects

	Total Cost	Pre-FY 93 Funding	FY 93 Fund Req't.	Post-FY 93 Funding
Core System Improvements	*in thousands of dollars*			
Next generation central control sys.	21,250	1,683	2,042	17,525
Replace systemwide radio network	29,300	350	6,600	22,350
Train destination identification	4,927	400	820	3,707
A-line train control imprv't.	10,887	0	1,000	9,887
A-line traction power imprv't.	32,137	0	6,000	26,137
New transit vehicles	71,654	654	0	71,000
M-line traction power imprv't.	83,000	0	0	83,000
C-line traction power imprv't.	69,000	0	0	69,000
Subtotals	322,155	3,087	16,462	302,606
System Rehabilitation				
A&B car rehab	454,300	13,383	117,000	323,917
AFC replacement (see also ADA project)	40,000	0	500	39,500
Controls & communications rehab	29,408	0	1,525	27,883
Mainline rehab	69,452	0	3,069	64,883
Stations rehab	58,651	0	10,487	48,164
Shops & yards rehab	39,879	0	9,262	30,866
Work equipment replacement	20,432	0	1,347	19,085
Subtotals	712,122	13,383	143,190	554,298
Safety and Security				
Safety improvements	22,513	0	5,432	17,081
Seismic retrofits	181,047	0	0	181,047
Subtotals	203,560	0	5,432	198,128
Service Improvements				
A.D.A key station project	11,752	0	482	11,270
El Cerrito parking	10,000	0	0	10,000
West Oakland parking	8,000	266	0	7,734
Hayward transit center	1,142	0	0	1,142
BayFair transit center imprv't.	950	0	0	950
Union City pkg. & transit ctr.	12,675	0	0	12,675
Fruitvale pkg. & transit ctr.	15,157	180	0	14,977
Rockridge parking	8,136	382	0	7,754
Alameda park/ride	429	0	0	429
Station entrance canopies	27,000	0	0	27,000
Subtotals	95,241	828	482	93,931

	Total Cost	Pre-FY 93 Funding	FY 93 Fund Req't.	Post-FY 93 Funding
	in thousands of dollars			
Operational Efficiencies & Administration				
Repairable components	4,000	0	0	4,000
Automation of cash handling ops.	85	0	85	0
Small projects	19,000	0	1,000	18,000
Replace HVAC at Cash Hdlg. Bldg.	209	0	0	209
New admin. hdqtrs. building	60,000	0	0	60,000
Subtotals	83,294	0	1,085	82,209
Extensions Studies				
Oakland Airport Connector	1,500	0	1,500	0
West Contra Costa AA/EIR/EIS	2,500	0	2,500	0
Subtotals	4,000	0	4,000	0
TOTALS	1,420,372	17,298	170,651	1,231,172

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CORE SYSTEM IMPROVEMENTS

NEXT GENERATION CENTRAL CONTROL SYSTEM

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$21,250,600	$1,683,333	$2,042,000	$17,525,267

Project description:
The purpose of this project is to replace existing supervisory control and data acquisition computer systems. The systems include the Destination Sign System (DSS), the Data Acquisition System (DAS), the Train Information Monitor System (TIM), and the hardware and database platform for the Central Computer System (CCS). This project is essentially replacement in nature, complementing a separately funded Central Control project within the Phase 1 extensions program.

Project justification:
The software development and increased computer capability provided by this project are required to provide necessary computer capacity for improved system reliability, better patron information service, and enhanced tracking of patronage data. Portions of the project will provide essential support for operation of the District's system extensions. This project would use fault tolerant computers capable of supporting all four Central Control subsystems (DSS, DAS, TIM, CCS).

The Destination Sign System (DSS) is 20 years old, has not been manufactured for 15 years and cannot be modified or upgraded to accommodate new requirements imposed by the extension stations and proposed operating plans. The extensions may require a make/break train capability which cannot be accommodated by the existing destination sign system. While the replacement of the signheads in existing stations is not essential to operation of the extensions (and this part of the Next Generation Project therefore carries a lower priority) they are deteriorating and need to be replaced in order to maintain their reliability, improve patron information service, and reduce maintenance costs.

The Data Acquisition System (DAS) also runs on 20 year old computers that are beyond their economic life, cannot be modified to add the required functionality, and are no longer manufactured. Current system reliability and availability is extremely poor. This is negatively affecting the District's ability to provide timely, accurate data. The replacement would assure an open-ended system to accommodate the extensions program and future District requirements under consideration.

The Train Information Monitor (TIM) system is a train location information display system available to patrons in the faregate area. It is currently being demonstrated in a limited manner at two stations and is planned to be installed in all stations.

This project would provide for all of these applications to reside on a common fault tolerant computer platform at Central Control and in each station. This would reduce the required total number of BART control computers by more than 60 percent. Fault tolerant hardware eliminates acute maintenance requirements usually associated with mission-critical applications on conventional type computer systems. Computer spare parts are a part of the basic fault tolerant equipment's "pairs and spares" design and need not be supplemented with a separate inventory. Hardware component failures that do occur are identified by the system and the defective components are bypassed automatically utilizing the "internal spares". Automatic alarms identify the failures to system monitors, hardware error logs and to the manufacturer's service center in real time providing for the automatic dispatch of replacement parts via next day delivery. The planned design would eliminate most single points of failure.

REPLACE SYSTEMWIDE RADIO NETWORK

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$29,300,000	$350,000	$6,600,000	$22,350,000

Project description:
The purpose of this project is to design, furnish, and install a multi-frequency, trunked radio network systemwide, replacing the radio equipment presently in service. This project complements the separately-funded radio network extension project which is part of the Phase 1 rail system extension program.

Project justification:
The existing radio system is inadequate to handle the heavy and growing demands of police operations, train operations and maintenance communications. Calls are often temporarily blocked as too many users attempt to access the system at the same time. The system is old and unreliable. A new trunked network would provide ample capacity and coverage to meet all foreseeable needs, including the Phase 1 rail system extensions.

TRAIN DESTINATION IDENTIFICATION ENHANCEMENT

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$4,926,856	$400,000	$820,000	$3,706,856

Project description:
The purpose of this project is to increase the number of destination bits in the train identification codes. It involves replacing the Automatic Train Operations (ATO) circuitry with microprocessors which can handle the addition of new destinations on the rail system extensions, and provides increased operational flexibility.

Project justification:
There are not enough bits in the existing train identification code to handle the new destinations required by the extensions. Microprocessor-based technology is far more expandable and flexible in operation than the current equipment. The existing equipment is old and many replacement parts are no longer made.

A-LINE WAYSIDE TRAIN CONTROL IMPROVEMENTS

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$10,886,558	$ 0	$1,000,000	$9,886,558

Project description:
The purpose of this project is to resignal the A-Line between BayFair Station and the Oakland Wye, to include changes to the interlocking in the Wye. The project includes the design, procurement, installation and testing of train control equipment.

Project justification:
This project is required to provide for operation of trains on decreased scheduled headways so that trains operating on the Dublin-Pleasanton Extension can merge with the existing train service from Fremont.

A-LINE TRACTION POWER IMPROVEMENTS

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$32,137,000	$ 0	$6,000,000	$ 26,137,000

Project description:
The purpose of this project is to add five new substations to the Fremont-line between BayFair and Lake Merritt Stations, lower resistance of contact rail along parts of this segment, and change the PG&E supply transformer at the Watson Avenue switching station to one of higher capacity.

Project justification:
Engineering studies show that the electric traction power system must be improved along this segment to satisfy voltage criteria for train operation at future service levels with the system extensions. In the absence of this project additional trains at closer headways would result in unacceptably low contact-rail voltage under normal and contingency conditions, which would cause service disruptions.

NEW TRANSIT VEHICLES

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$71,653,833	$653,833	$ 0	$71,000,000

Project description:
The purpose of this project is to procure additional rail transit vehicles.

Project justification:
This procurement is planned for 30 cars beyond those which are to be funded within extensions budgets in the current procurement for vehicles required by the rail system extensions.

M-LINE TRACTION POWER IMPROVEMENTS

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$83,000,000	$ 0	$ 0	$83,000,000

Project description:
The purpose of this project is to add low-resistance contact rail and additional substation and gap-breaker capacity at several locations on the M-line, between the Oakland Wye and Daly City Station.

Project justification:
Engineering studies show that the electric traction power system must be improved to satisfy voltage criteria for train operation at future service levels with the system extensions. In the absence of this project additional trains at closer headways would result in unacceptably low contact-rail voltage under normal and contingency conditions, which would cause service disruptions.

C-LINE TRACTION POWER IMPROVEMENTS

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$69,000,000	$ 0	$ 0	$69,000,000

Project description:
The purpose of this project is to add two new substations, larger 34.5KV cables and low-resistance contact rail at several locations on the C-line.

Project justification:
Engineering studies show that the electrification system must be improved to satisfy voltage criteria for train operation at future service levels with the system extensions. In the absence of this project additional trains at closer headways would result in unacceptably low contact-rail voltage under normal and contingency conditions, which would cause service disruptions.

I. Core System Improvement Projects

	Funding Req't.	Fiscal Years					
		1993	1994	1995	1996	1997	1998-02
Priority 1							
Next gen. control system essential ($1.683M funded)	13,980	2,042	3,415	4,508	2,050	1,965	
Replace radio network ($350K funded)	28,950	6,600	15,000	7,350			
Train destination identification enhancement ($400K)	4,527	820	3,000	707			
A-line wayside train control improvements	10,887	1,000	9,887				
A-line traction power improvements	32,137	6,000	26,137				
Subtotal	90,481	16,462	57,439	12,565	2,050	1,965	0
Priority 2							
New transit vehicles	71,000				71,000		
M-line traction power Improvements	83,000				29,050	53,950	
C-line traction power improvements	69,000				24,150	44,850	
Subtotal	223,000	0	0	0	124,200	98,800	0
Priority 3							
Next gen. control (destination sign replacement)	5,587		2,107	2,107	1,373		
Category Total	319,068	16,462	59,546	14,672	127,623	100,765	0

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SYSTEM REHABILITATION PROJECTS

A & B CAR REHABILITATION

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$454,300,000	$13,383,000	$117,000,000	$323,917,000

Project description:
The purpose of this project is to rehabilitate the original 440 car fleet of A and B rail transit cars to obtain an additional 15 to 20 years of service. Systems to be replaced or rebuilt include electrical, suspension, braking, coupling, heating and cooling, upholstery and carpeting, and noise reduction. This project will also bring the A and B cars into compliance with the provisions of the Americans With Disabilities Act.

Project justification:
The original cars are approaching their design life of 20 years. They are showing signs of failure and are requiring increased maintenance. The problems requiring attention at this time cannot be accommodated by routine maintenance, but require complete teardown and rebuilding as appropriate. The cost of remanufacturing vehicles is estimated at approximately 50 percent of new car cost.

AFC EQUIPMENT REPLACEMENT

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$40,000,000	$ 0	$500,000	$39,500,000

See related ADA Key Station project in Service Improvements section.

Project description:
AFC Replacement is a $50,000,000 project to replace all existing automatic fare collection (AFC) equipment (farecard vendors, addfare machines, and faregates). The portion of the replacement that addresses accessibility requirements under the Americans With Disabilities Act ($10,000,000) is separately listed in this CIP in the *Service Improvements* section.

Project justification:
The existing equipment has been in service for 20 years. It is worn, parts must be custom-fabricated, and failure rates are increasing which results in higher maintenance costs and deteriorating customer service. Obsolete electronics in existing equipment are unable to provide needed treasury, security, and maintenance information.

CONTROLS & COMMUNICATIONS REHABILITATION

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$29,408,000	$ 0	$ 1,525,000	$27,883,000

Project description:
The purpose of this program of projects is to rehabilitate BART's controls and communications systems, including replacement of deteriorated and obsolete components and subsystems. The largest single project in this program is the planned transition to a more advanced system of automatic train control. Project development activities are currently underway to further define the technical approach to be taken, costs and schedules. Improved train control must be in place to support the lower headways BART anticipates implementing within the next decade.

This program also includes replacing the maintenance vehicle detection devices, replacing supervising and control equipment in each of 41 train control rooms, replacing the existing Digital Transmission System (DTS) control equipment, and replacing the existing wayside cable plant. This program will also provide small computers in each yard tower, yard transportation building, terminal zone, and the Operations Control Center to coordinate train and train operator scheduling, and provide a link to the transportation computer network. Other projects in the program would replace operations consoles in Central Control and the District's mainframe MIS computer at the end of that equipment's useful lifetimes, and would provide for replacement and updating of critical systems control software (i.e. MARIS, a maintenance tracking program).

Project justification:
Transition to an advanced system of automatic train control is essential to supporting the reduced headways projected to be necessary to accommodate future patronage growth and operation of the extensions. The maintenance vehicle detection devices are critical units to protect maintenance vehicles and crews working in the right-of-way in the vicinity of other moving vehicles, including transit vehicles, on the track. The existing DTS equipment is an obsolete, unique-to-BART control system that is very awkward and difficult to maintain, virtually impossible to expand, and lacks the ability to perform advanced control tasks without a computer system attached. The replacement network would be an expansion of the system to be furnished for the extensions.

The wayside cable plant is aging and becoming more unreliable. Failures in the cable plant can result in disruption of passenger service. The yard tower data network would allow the operation of additional trains without an increase in staffing levels. This project would automate and facilitate the critical tasks of tracking train lengths, car locations, and train operator assignments. The Central Control consoles, MIS computer and various major software systems require replacement or updating on a regular basis in order to accommodate growing demands for computer services and technological advances.

MAINLINE REHABILITATION

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$69,452,000	**$ 0**	**$ 3,069,000**	**$66,383,000**

Project description:
The purpose of this program of projects is to replace and rehabilitate those components and subsystems of BART's mainline which have deteriorated, or will in the next decade, due to age and use. This includes the following representative elements:

- Replacement of worn rail and switch components throughout the system.
- Replacement of specialized rail components such as fasteners, insulated joints, rail lubricators, and timber in maintenance-of-way access points.
- Replacement of the wooden ties on the Concord Line with concrete ties.
- Replacement of contact rail (third rail for traction power).
- Replacement of fencing along the right-of-way.
- Replacement of line sump pumps in tunnels and subways systemwide.
- Repair and modification of damaged portions of concrete subway tunnel under the Lake Merritt Channel.
- Recoating and repainting of steel structural elements for corrosion protection.
- Replacement or rehabilitation of traction power transformers, circuit breakers, and grounding devices, and other components.
- Rehabilitation of traction-power substation regulation to give a flatter characteristic at a high average voltage level.
- Rehabilitation of traction power substation protective relaying.
- Renovation and replacement of traction rectifier sets.
- Replacement of diode/mechanical contactor negative return grounding devices.

Project justification:
Many components of the trackway and traction power systems are 20 years old, are failing with increased frequency and must be replaced. This mainline rehabilitation project will prevent rail and traction power failures which would cause disruption and delays to revenue service.

STATIONS REHABILITATION

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$58,651,000	$ 0	$ 10,487,000	$48,164,000

Project description:
The purpose of this program of projects is to improve the customer experience in stations by rehabilitating or replacing equipment that is worn, unreliable, obsolete, or no longer economical to clean or repair. This includes the following representative elements:

- Replacement of the most unreliable station escalators and complete rehabilitation of all other escalators and elevators.
- Purchase and installation of 400 new bicycle lockers to replace existing lockers.
- Repair of damaged concrete roof and waterproofing on the mezzanine level of Lake Merritt Station, to restore the structural and waterproofing integrity of the station roof slab.
- Replacement of the platform level ceiling in Lake Merritt Station.
- Repair of the sub-surface of platform edges at several stations, and replace the platform edge tiles.
- Replacement of roofing at stations systemwide.
- Replacement of the light standards on platforms of outdoor stations.
- Replacement of the sewage pumps in underground stations.
- Replacement of bus transfer machines.
- Replacement of station public address systems.
- Replacement of worn and unreliable motorized security gates and grills.
- Reconfiguring the restrooms at Embarcadero, Montgomery and Powell Street Stations, and refurbish all station restrooms.
- Replacement of obsolete station lighting systems.

Project justification:

- Failed escalators are one of the biggest sources of patron inconvenience in the BART system. Several of the existing escalators were not designed to accommodate the loads they are subjected to currently, and need to be replaced. All of the escalators are at or near the end of their design life and need to be completely rebuilt in order to extend their reliable service life.
- The existing bicycle lockers are in poor shape and are not secure. Renters complain that lockers are easily vandalized. Since the current lockers are 16 years old, replacement parts for repairs are no longer available. New lockers might encourage more people to use bicycles as access to BART stations.

- A portion of the Lake Merritt station concrete roof, over the paid area of the mezzanine level, has sustained structural and waterproofing damage. The damage has caused water leakage in the south stairway area making it necessary to close that stairway whenever it rains. The water intrusion will also corrode the reinforcing steel in the concrete roof, causing further structural deterioration as the leak continues.
- The existing light standards on station platforms are corroded and need to be replaced. They are over 20 years old, obsolete and no spares are available.
- The existing sewage pumps are over 20 years old, are wearing out, are becoming uneconomical to repair, and need to be replaced.
- The existing security gate and grill equipment is 20 years old, wearing out, unreliable, becoming uneconomical to repair, and no spares are available.
- Reconfiguring and refurbishing station restrooms would improve customer comfort and convenience.

SHOPS AND YARDS REHABILITATION

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$39,879,000	**$ 0**	**$ 9,262,000**	**$30,617,000**

Project description:
The purpose of this program of projects is to address the deterioration of the shops and yards due to two decades of continuous use and age. Representative elements of this work are as follow:

- Replace running rail and turnouts in the yards.
- Replace the existing wheel/axle press at Hayward Shop.
- Replace the existing wheel truing machine at the Hayward Shop.
- Add a wheel truing machine at the Daly City Shop.
- Add a second wheel/axle press at the Hayward Shop.
- Replace yard 1,000 volt disconnect switch enclosures, which isolate storage tracks and spur tracks.
- Replace shop roll-up doors at the four East Bay shops.
- Replace the heating, ventilation and air conditioning systems in the shops.
- Replace the existing transit vehicle car washers located at the Hayward, Richmond and Concord Shops.
- Replace the overhead cranes at the Concord, Richmond and Hayward Yards.
- Resurface, restripe and relamp shop parking lots and access roads at the Concord, Hayward and Richmond Shops.
- Replace shop roofing systemwide.
- Reconfigure Hayward Shop traction motor and motor alternator repair areas.

- Strip, clean and repaint entire shop floors, pits and related work surfaces at Concord, Daly City, Hayward and Richmond Shops.
- Add small traction power substations in the yards to supply power to the local/shop areas separate from the existing yard traction power substations.
- Reconfigure and add inventory and repairables storage space at shops.

Project justification:
This project will:

- Improve passenger transit service by improving revenue vehicle reliability through better maintenance, and by reducing vehicle out-of-service time and keeping as many vehicles in service as possible, thereby reducing train crowding.
- Make the shops and yards safer places in which to work.
- Provide cost savings to the District by reducing maintenance turn-around time and eliminating travel time to and from vendors.
- Improve the efficiency of the shops and yards by providing employees with dependable equipment needed to perform their duties effectively.

WORK EQUIPMENT REPLACEMENT

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$20,432,000	$ 0	$ 1,347,000	$19,085,000

Project description:
The purpose of this program is to replace worn and obsolete maintenance and service vehicles and maintenance equipment. This equipment includes such items as tools, power generator sets, light towers, grounds and buildings maintenance equipment, shop equipment, test instruments, light-duty highway vehicles, BART police and personnel sedans, and heavy-duty maintenance vehicles (diesel trucks, tractors, and track maintenance vehicles).

Project justification:
BART's maintenance equipment gradually becomes worn from use. Eventually it becomes more economical to replace the old equipment rather than repair it. The ongoing equipment replacement program assures that old, worn out equipment is replaced in a timely manner to minimize overall costs and ensure personnel safety. If this equipment is not replaced, overall costs will increase, maintenance crews will be disrupted by failed equipment, and service to patrons will deteriorate.

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II–A. A and B Car Rehabilitation

	Funding	Fiscal Years					
Priority 1	Req't.	1993	1994	1995	1996	1997	1998–02
Phase I–A (funded at $4.6 M)	0						
Phase II–A (funded at $8.783 M)	117,000	117,000					
Phase II–B	323,917				200,917		123,000
Project Total––funded at $13.383M	440,917	117,000	0	0	200,917	0	123,000

II–B. AFC Replacement

See also "Accesible AFC" portion of ADA project	Funding	Fiscal Years					
Priority 1	Req't.	1993	1994	1995	1996	1997	1998–02
Station–by–station implementation	40,000	500	8,700	7,500	17,500	5,800	0

II–C. Controls & Communications Rehabilitation

	Funding	Fiscal Years					
	Req't.	1993	1994	1995	1996	1997	1998–02
Priority 1							
Replace Maint. Vehicle Detection Devices	1,500		1,500				
Priority 2							
Replace Digital Transmission System	3,200		3,200				
Replace call check recorders	50	50					
Replace tower console PA systems	15		15				
Replace tower console IC & radio switch matrix	15		15				
Replace cable plant (excl. T1) systemwide	250	25	25	25	25	25	125
Replace wayside cable plant splice boxes syswide	100	100					
Replace Tektronix consoles in Central	1,108	554	554				
Yard tower data network	600	600					
Replace MARIS (MIS) software	640		640				
Replace MIS mainframe computer	3,000				3,000		
Subtotal	8,978	1,329	4,449	25	3,025	25	125
Priority 3							
Advanced automatic train control	15,224	196	5,220	9,573	235		
Priority 4							
Replace SORS systemwide	2,006			2,006			
Replace T1 cable systemwide	1,700			1,700			
Subtotal	3,706	0	0	3,706	0	0	0
Category Total	29,408	1,525	11,169	13,304	3,260	25	125

II-D. Mainline Rehabilitation

	Funding	Fiscal Years					
	Req't.	1993	1994	1995	1996	1997	1998-02
Priority 1							
Replace R-O-W fencing and barbed wire	592	53	53	84	84	127	191
Repair Lake Merritt Channel subway structure	1,600	100	1,500				
Replace surfaces at maintenance set-on points	596		149	149	149	149	
Replace running rail & accessories	12,685	866	1,888	1,200	972	1,762	5,997
Retrofill traction pwr. transformer dielectric liquid	1,836	258	258	258	258	258	546
Replace asbestos-containing arc chutes	540	540					
Rehab insulation in transformer rectifiers	13,349	83	83	167	13,016		
Subtotal	31,198	1,900	3,931	1,858	14,479	2,296	6,734
Priority 2							
Replace traction substation grounding devices	1,050			1,050			
Recoat steel tunnel liner rings	825	120	155	155	85		310
Repaint steel girders for corrosion protection	425	175				75	175
Replace sump pumps in subway tunnels	1,800			900	900		
Repair structure damage in S.F. approach tunnel	800		800				
Reinforce coverboard mountings	177	177					
Replace contact rail	10,050			50			10,000
Repair or replace cable pipe	1,525					50	1,475
Replace C-line 34.5 KV cable	15,495	45		450	5,000	5,000	5,000
Replace 1 KV flex jumpers	510	510					
Replace traction power house roofs	250	50	100	100			
Repair or replace rectifiers and buss work	1,050	50	250	250	250	250	
Subtotal	33,957	1,127	1,305	2,955	6,235	5,375	16,960
Priority 3							
Repaint steel bridges for corrosion protection	1,750		700	350	350	350	
Priority 4							
Replace traction power control batteries	175	35	35	35	35	35	
Replace reclosers, potentials, transfer trip controls	1,136	7	7	249	277	277	319
Replace 1 KV disconnect switch enclosures	600		200	200	100	100	
Replace grounding diode switch contactors	636					106	530
Subtotal	2,547	42	242	484	412	518	849
Category Total	69,452	3,069	6,178	5,647	21,476	8,539	24,543

II-E. Stations Rehabilitation

	Funding Req't.	Fiscal Years					
		1993	1994	1995	1996	1997	1998-02
Priority 1							
Replace ceiling in No. Berkeley Station	873	873					
Replace platform edge tile	3,853	1,473	1,020	1,360			
Repair platform sub-surface at six stations	420	140	140	140			
Replace lentel structures on W. Oakland platforms	1,500		1,500				
Repair concrete roof of Lake Merritt Station	355	355					
Replace roofing systemwide	5,200	520	520	520	520	520	2,600
Replace four Embarcadero Sta. escalators	2,600	2,600					
Replace hydraulic valves and sills on elevators	510	510					
Subtotal	15,311	6,471	3,180	2,020	520	520	2,600
Priority 2							
Replace station agents' consoles systemwide	1,600			1,600			
Replace/rehab escalators and elevators systemwide	9,500		3,170	3,170	3,160		
Replace roll-up station security gates	2,251		700	277	1,274		
Replace station parking lot signs	240	30	30	30	30	30	90
Refurbish restrooms at all stations	840	80	105	90	115	100	350
Recaulk platform expansion points	32	6	8	6	4	6	2
Replace all primary station agents' booths	5,100	600	600	600	600	600	2,100
Refurbish staff breakrooms at all stations	157	16	18	17	17	17	72
Restore damaged/missing wall tile	440	150	150	140			
Refurbish station lighting fixtures	3,525	550	650	575	475	650	625
Replace damaged/missing station signage	91	8	8	9	12	13	41
Repair and repaint all painted surfaces	2,900	260	210	230	290	350	1,560
Restore worn floor tile and brick	1,600	160	160	160	160	160	800
Replace raised and damaged concrete walks at sta.	730	132	75	93	51	19	360
Restore platform canopies and windscreens	400		240	160			
Refurbish stair/escalator walk-off mats	1,200	150	150	150	150	150	450
Replace AC and Muni transfer machines	240	240					
Subtotal	30,846	2,382	6,274	7,307	6,338	2,095	6,450

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II–E. Stations Rehabilitation (continued)

	Funding Req't.	Fiscal Years					
		1993	1994	1995	1996	1997	1998–02
Priority 3							
Replace P.A. systems at all stations	680				680		
Replace station bike lockers	1,050	105	105	105	105	105	525
Replace lighting systems in downtown S.F. stations	1,723				1,723		
Replace locks at all stations	280		30	30	60	60	100
Reconfigure restrooms at three S.F. stations	370		61	309			
Resurface parking lots at stations as needed	1,537	459	215	228	251	193	191
Modify parking lot drainage at Bayfair Station	30	30					
Build staff breakrooms at eight stations	375	200	70	105			
Refurbish irrigation systems at all landscaped sta.	2,330	550	550	325	150	350	405
Refurbish landscape and hardscape at stations	1,185	270	175	175	125	225	215
Refurbish/replace pigeon netting	200	20	20	20	20	20	100
Subtotal	9,760	1,634	1,226	1,297	3,114	953	1,536
Priority 4							
Replace sewage pumps in underground stations	381				381		
Replace station parking lot lighting fixtures	2,353					2,353	
Subtotal	2,734	0	0	0	381	2,353	0
Category Total	58,651	10,487	10,680	10,624	10,353	5,921	10,586

II–F. Shops & Yards Rehabilitation

	Funding	Fiscal Years					
Priority 1	Req't.	1993	1994	1995	1996	1997	1998–02
Replace yard rail	471			91	91	91	198
Replace or recondition dust collectors	498	249	249				
Replace parts washing facilities	300	300					
Replace Hayward Shop wheel truing machine	1,570	1,570					
Replace wheel/axel press at Hayward Shop	1,300		1,300				
Subtotal	4,139	2,119	1,549	91	91	91	198
Priority 2							
Replace turnouts at Concord Shop	752		63	63			626
Replace turnouts at Hayward Shop	2,099	188	188	219	282	282	940
Replace turnouts at Richmond Shop	409	126	126	94	63		
Reconfigure storage space at Concord and Richmond	2,973	513	2,460				
Add storage space at Whipple Rd. facility	3,341	630	2,711				
Office space at Concord Stores	10	10					
Resurface truck bay and storage area	43	10	33				
Replace overhead cranes at all shops	2,545			770	1,005		770
Replace air breathing systems at four shops	76	19	19	19			19
Daly City wheel truing machine and bldg.	3,813	3,813					
Subtotal	16,061	5,309	5,600	1,165	1,350	282	2,355
Priority 3							
Replace inventory control system (barcoding)	100	100					
Replace transit vehicle washers in East Bay yards	4,027	7	1,340	1,340	1,340		
Recondition shop sump pumps at all shops	213	213					
Reconfigure Hayward traction motor overhaul area	2,150	150	2,000				
Additional 1 KV outlets at three shops	150	150					
Second wheel/axle press at Hayward Shop	2,080		2,080				
Recondition all shop overhead and pit lighting	105		11	26	38	14	16
Additional tracks at Hayward Yard	86			86			
Additional work pits at three yards	304			76	76	76	76
Subtotal	9,215	620	5,431	1,528	1,454	90	92

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II–F. Shops & Yards Rehabilitation (continued)

	Funding	Fiscal Years					
	Req't.	1993	1994	1995	1996	1997	1998–02
Priority 4							
Corrosion protection isolation of shop traction power	2,760	260	2,500				
Replace roll–up doors on East Bay shops	1,038		750	288			
Replace shop radiant heaters	173		173				
Resurface storage area at Hayward Shop	90	90					
Resurface storage area at Richmond Shop	18	18					
Resurface roads/parking and relamp exterior lights	250		250				
Reconfigure/replace grease/oil facilities in all shops	124	124					
Replace window changing facilities at Hayw. and D.C.	52	52					
Replace heating/cooling systems at shops	2,600		2,600				
Repaint shop floors	470	470					
Switch point protectors	60	60					
Replace yard disconnect enclosures	110		110				
Replace shop roofing	1,146		1,146				
Subtotal	8,891	1,074	7,529	288	0	0	0
Priority 5							
Paint and repair booth	1,000	75	925				
Recondition restrooms and locker rooms all shops	126		57	57			12
Storage area canopy and lighting	141		141				
Roll–up doors on blowdown bldgs. at two shops	65	65					
Rehab all shop offices	131		102	29			
Replace or recondition shop phone system	110		110				
Subtotal	1,573	140	1,335	86	0	0	12
Category Total	39,879	9,262	21,444	3,158	2,895	463	2,657

II–G. Work Equipment Replacement

	Funding	Fiscal Years					
Priority 2	Req't.	1993	1994	1995	1996	1997	1998–02
Replace 120 tool and equipment items	506	180	76	76	68	27	79
Replace two forklifts	100	50					50
Replace or recondition test equipment and tools	275				75	175	25
Replace police cars	1,227	193	158	228	140	53	455
Replace vans	1,202		141	125	78	156	702
Replace pick–ups	1,699		107	160	248	324	860
Replace armored tractor–trailer truck	585			117			468
Replace hi–rail crew trucks	1,375			375	250	250	500
Replace hi–rail dump truck	110	110					
Replace hi–rail fire trucks	700				350	350	
Replace hi–rail rerailing crane	450			450			
Replace hi–rail yard switchers	720			360			360
Replace hi–rail wrecker	225			225			
Replace hi–rail multi–crane	300				300		
Replace boom truck	85				85		
Replace hi–rail speed swing	199						199
Replace backhoe/tractor	51					51	
Replace hi–rail vacuum truck	200						200
Replace dump truck	47						47
Replace double bucket truck	80						80
Replace hi–rail under–bridge truck	450			450			
Replace flat–bed truck	48			48			
Replace lube truck	105					105	
Replace hi–rail welding trucks	405			135		270	
Replace trailer–mounted 635 KW generator	70						70
Replace portable pumps	16				8		8
Replace locomotives	600					300	300
Replace rail grinder	1,200						1,200
Replace tamper liner	320						320
Replace ballast regulator	175						175
Replace geometry car	1,800						1,800
Replace steam cleaner	24						24
Subtotal	15,349	533	482	2,749	1,602	2,061	7,922

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II-G. Work Equipment Replacement (continued)

	Funding	Fiscal Years					
	Req't.	1993	1994	1995	1996	1997	1998-02
Priority 3							
Replace forklift/cart	10	5					5
Replace electric maintenance carts and chargers	500	250					250
Replace car/truck lifts at all shops	367	241	63	63			
Replace air compressors at all shops	418	187	154			77	
Replace lathes and mills at Hayward and Oakland	202		202				
Replace machine shop equip. at four shops	50						50
Portable traction power substation	1,583		1,583				
Replace sedans	955		92	78	157	170	458
Replace forklift	60			60			
Replace trailer-mounted welder	30					15	15
Replace trailer-mounted compressor	70						70
Replace trailer-mounted 50 KW generator	40						40
Replace portable 3 KW generators	12					2	10
Replace trailer	57						57
Replace trailer	24						24
Subtotal	4,378	683	2,094	201	157	264	979
Priority 4							
Replace trailer-mounted chipper	18					18	
Replace bobcat small tractor	35						35
Replace concrete chipper	2						2
Replace steam cleaners	66	19	6	8		14	19
Replace test equipment	298	112	53	40	30	5	58
Subtotal	419	131	59	48	30	37	114
Priority 5							
Replace trash compactors	286		221			65	
Category Total	20,432	1,347	2,856	2,998	1,789	2,427	9,015

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SAFETY AND SECURITY

SAFETY IMPROVEMENTS

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$22,513,000	**$ 0**	**$ 5,432,000**	**$17,081,000**

Project description:
The purpose of this program is to eliminate or mitigate potential safety hazards within the District through a set of projects as follows:

- Cathodic corrosion protection to ensure the structural integrity of the Transbay Tube (TBT) and related facilities (i.e. San Francisco Ferry Building piles and San Francisco approach tunnel). This includes visual inspection of the TBT's outerskin, replacement of worn and missing components of the cathodic protection system and installation of rail fastener insulation.
- Upgrading the emergency lighting system in the stations and tunnels.
- Installing additional handrails and removing obstructions on emergency walkways.
- Replacing the existing fire alarm systems, and refurbishing and enhancing the Transbay Tube and tunnel ventilation systems.
- Providing electrical insulation in the 12th and 19th Street Station walls as well as on aerial structure guard rails systemwide.
- Enhancing the District's fire fighting capabilities by installing motorized valves in the fire mains of the Berkeley Hills Tunnel, installing dry standpipes at I-680 and Springbrook overcrossings and implementing a plan coordinating the tunnel hose valves with their primary and secondary sources of water.
- Remove architectural hazards for the vision-impaired.
- Providing secondary containment of potentially hazardous materials in power transformers.
- Providing asbestos abatement work resulting from damage to building insulation at various BART facilities.

Project justification:
Inspection of the outer skin of the TBT would provide information required to evaluate its condition in order to plan for repair, renovation or component replacement. The cathodic protection system must be maintained to prevent corrosion of the TBT and related facilities. Improved rail fastener insulation is required to stop stray currents which causes corrosion of rail, rail fasteners and structures.

Several of these projects would improve public safety by reducing the possibility of fire, facilitating the evacuation of tunnels and stations and enhancing fire fighter response to fires. Other projects would improve the ability of visually impaired patron to move around in the stations with less hazard of collision with station furniture. And yet another project would accommodate recent regulations regarding required containment of hazardous materials in the even of leaks or accidents.

The October 1989 earthquake damaged asbestos-containing insulation which has increased the potential for creating airborne asbestos fiber exposure in District facilities. It is desirable to mitigate the damage to eliminate this potential.

SEISMIC RETROFITS

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$181,047,000	$ 0	$ 0	$181,047,000

Project description:
The purpose of this program of projects is to enhance the system's ability to safely endure severe earthquakes and quickly return to service by:

- Improving the structural strength of BART's aerial structures and Transbay Tube joints in order to withstand greater seismic forces.
- Improving the system of seismic detectors which slows or stops trains in the event of an earthquake.
- Installing automatic seismic gas shut-off valves.
- Providing engine-generators for the event of a possible PG&E power loss.
- Provide restraints for overhead crane structures at maintenance shops.
- Provide tie downs for the stands that transit vehicles are supported on during maintenance at the shops.

Project justification:
The structural strengthening components of this project will bring existing structures up to current seismic standards, and improve the ability of the system to withstand major earthquakes with little or no damage. Other components of this project will augment earthquake preparedness systems already in place to provide more coverage, more detailed and accurate information, and to permit faster response to protect the safety of the rail system, its patrons and employees.

III-A. Safety Improvement Program

	Funding	Fiscal Years					
Priority 1	Req't.	1993	1994	1995	1996	1997	1998-02
Remove obstructions on emergency walkways	300	300					
Transbay Tube cathodic protection	4,964		2,600				2,364
Vent fan blade balance improvements	1,700	1,487	213				
Anti-skid groove-and-fill on station stairs	258	258					
Subtotal	7,222	2,045	2,813	0	0	0	2,364
Priority 2							
TBT vents automatic power transfer	2,200	2,200					
Upgrade station emergency lighting	3,793		3,793				
TBT fan and damper control improvements	844		844				
Replace TBT lower gallery lighting fixtures	150		150				
Additional blue light safety stations	130		130				
Replace fire mains in three stations	250		250				
Station stairway detection warning (E&H)	56		56				
Remove architectural hazards in stations (E&H)	560	425	135				
Hazmat containment around power transformers	800		800				
Remove gaps in handrail along emergency walkways	230		230				
Replace four stations fire alarm systems	200		200				
Replace BHT fan controller	200	200					
Install storage areas sprinker systems	310		310				
Additional electrical insulation at various locations	140	140					
Motorize fire main valves in BHT	200			200			
Dry standpipes at I-680 and Springbrook crossings	200			200			
Tunnel hose valve plan	135			135			
Asbestos abatement (moderate and low priority)	4,893	422		4,471			
Subtotal	15,291	3,387	6,898	5,006	0	0	0
Category Total	22,513	5,432	9,711	5,006	0	0	2,364

III–B. Seismic Retrofit Program

	Funding	Fiscal Years					
	Req't.	1993	1994	1995	1996	1997	1998–02
Priority 2							
Seismic tiedowns on vehicle support stands in shops	333			333			
Seismic restraints on overhead cranes	176			176			
Engine–generators for earthquake standby power #1	4,462			4,462			
Seismic structural evaluation of aerial structures	1,010		1,010				
Seismic retrofit of aerial structures	170,000			17,000	17,000	17,000	119,000
Seismic anchoring of shop storage racks	12		12				
Seismic sensing system upgrade	2,201		2,201				
Gas valve automatic seismic shut–offs	142				142		
Engine–generators for eqrthquake standby power #2	1,855			1,855			
Retrofit Transbay Tube seismic joints	550		550				
Subtotal	180,741	0	3,773	23,826	17,142	17,000	119,000
Priority 3							
Global positioning satellite survey	306		34	34	34	34	170
Category Total	181,047	0	3,807	23,860	17,176	17,034	119,170

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SERVICE IMPROVEMENTS

A.D.A. KEY STATION COMPLIANCE PROJECT

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$11,752,000	$ 0	$482,000	$ 11,270,000

Project description:
This project begins BART's compliance with the A.D.A. (Americans With Disabilities Act) key station plan requirements. The first year component involves accessible-format signage. The provision of accessible automatic fare collection equipment, which is part of the post-FY93 component, is currently estimated at $10,000,000.

Project justification:
BART must implement the A.D.A. key station plan to comply with Federal law.

EL CERRITO PARKING EXPANSION

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$10,000,000*	$ 0	$ 0	$10,000,000*

Project description:
Contra Costa County Measure C provides $5.5 million in funding for BART patron parking expansion in the City of El Cerrito. BART and the City are currently cooperating on a study to determine at which station additional access improvements are most needed and manageable. *The scope, cost and schedule of this project will be finalized upon completion of that effort.

Project justification:
The two El Cerrito BART stations experience severe patron access constraints. The parking fills early in the morning peak, limiting access to the system later in the day when ample passenger-carrying capacity is available on trains. This negatively impacts potential patronage growth and fare revenue generation. This project will help alleviate this constraint.

WEST OAKLAND PARKING EXPANSION

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$8,000,000*	$266,314	$ 0	$7,733,686*

Project description:
This project would be constructed in the area near West Oakland Station that is being considered for use by other agencies for the Cypress Corridor freeway replacement and inter-city rail service. *The scope, cost and schedule for the project is subject to the results of these various planning activities, with which BART is cooperating. Conceptually, this project is to add approximately 1,000 parking spaces to the West Oakland Station in a new surface lot.

Project justification:
This station experiences severe patron access constraints. The parking fills early in the morning peak, limiting access to the system later in the day when ample passenger-carrying capacity is available on trains. This negatively impacts potential patronage growth and fare revenue generation. This project will help alleviate this constraint.

HAYWARD TRANSIT CENTER

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$1,142,000	$ 0	$ 0	$1,142,000

Project description:
The purpose of this project is to replace the 17 existing temporary bus bays with a permanent facility, and to improve patron amenities.

Project justification:
The temporary timed-transfer facilities developed for a demonstration phase of bus service improvements are inadequate for efficient, safe operation and patron comfort. Now that the bus service improvements are permanent, the transit center facilities should be improved.

BAYFAIR TRANSIT CENTER IMPROVEMENTS

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST FY 93 FUNDING
$950,000	$ 0	$ 0	$ 950,000

Project description:
The purpose of this project is to install bus-loading-area weather-protection canopies and patron amenities.

Project justification:
This project will provide adequate weather protection and amenities for bus patrons in the newly expanded bus area of this BART station.

UNION CITY PARKING EXPANSION AND TRANSIT CENTER

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$12,675,000	$ 0	$ 0	$12,675,000

Project description:
The purpose of this project is to add approximately 600 new patron parking spaces in a new surface lot, and 13 new bus bays and transfer patron amenities.

Project justification:
This station experiences severe patron access constraints. The parking fills early in the morning peak, limiting access to the system later in the day when ample passenger-carrying capacity is available on trains. This negatively impacts potential patronage growth and fare revenue generation. This project will help alleviate this constraint. The bus transit intermodal improvements are necessary to accommodate service improvements being planned by AC Transit and Union City Transit. The planned capacity increases will accommodate these higher levels of service. Additional patron comfort and convenience amenities are needed to attract patrons.

FRUITVALE PARKING EXPANSION AND TRANSIT CENTER

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$15,157,000	$180,000	$ 0	$14,977,000

Project description:
The purpose of this project is to add approximately 500 new parking spaces to the Fruitvale Station in a multi-level parking structure, and seven new bus bays and patron amenities. Further development of this project has been suspended at the request of the City of Oakland.

Project justification:
This station experiences severe patron access constraints. The parking fills early in the morning peak, limiting access to the system later in the day when ample passenger-carrying capacity is available on trains. This negatively impacts potential patronage growth and fare revenue generation. This project will help alleviate this constraint. The bus transit intermodal improvements are essential to accommodating service improvements being planned by AC Transit. The planned capacity increases will accommodate these higher levels of service. Additional patron comfort and convenience amenities are needed to attract patrons.

ROCKRIDGE PARKING EXPANSION

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$8,136,343	$382,343	$ 0	$7,754,000

Project description:
The purpose of this project is to add approximately 600 parking spaces to the Rockridge Station on a second level deck. Further development of this project has been suspended at the request of the City of Oakland.

Project justification:
This station experiences severe patron access constraints. The parking fills early in the morning peak, limiting access to the system later in the day when ample passenger-carrying capacity is available on trains. This negatively impacts potential

patronage growth and fare revenue generation. This project will help alleviate this constraint.

ALAMEDA PARK/RIDE

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$429,000	$ 0	$ 0	$429,000

Project description:
The purpose of this project is to provide an intermodal facility to accommodate off-street auto-to-bus transfers in Alameda. This project would include a parking lot and passenger waiting and bus loading areas. A specific site has not been identified to date.

Project justification:
This project would support local transit service by making the transit option more attractive. The result of this improvement would be an increase in transit patronage.

STATION ENTRANCE CANOPIES

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$27,000,000	$ 0	$ 0	$27,000,000

Project description:
The purpose of this project is to install 50 canopies over the escalators and pedestrian entry ways at ten underground stations in San Francisco, Oakland and Berkeley.

Project justification:
This project would result in weather protection for patrons entering the stations, reduced escalator maintenance costs, less escalator down time, increased security during non-revenue service periods and generally improved access to stations.

IV. Service Improvements

	Funding	Fiscal Years					
Priority 1	Req't.	1993	1994	1995	1996	1997	1998–02
Key Station improvements---ADA compliance	1,752	482	1,270				
Accessible AFC equipment---ADA compliance	10,000		10,000				
Subtotal	11,752	11,752	11,270	0	0	0	0
Priority 3							
Station parking in City of El Cerrito	10,000			10,000			
Station parking at West Oakland Station	7,734			7,734			
Hayward transit center	1,142		1,142				
Bayfair transit center improvements	950		950				
Union City parking and transit center	12,675		10,005	2,670			
Fruitvale parking and transit center	14,977			10,332	4,645		
Rockridge parking	7,754				7,754		
Alameda park and ride	429				429		
Subtotal	55,661	0	12,097	30,736	12,828	0	0
Priority 4							
Station entrance canopies	27,000					6,400	20,600
Category Total	94,413	482	13,367	30,736	12,828	6,400	20,600

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OPERATIONAL EFFICIENCIES & ADMINISTRATION

REPAIRABLE COMPONENTS

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$4,000,000	$ 0	$ 0	$4,000,000

Project description:
The purpose of this project is the procurement of repairable components to buildup the existing spare parts pool for A/B Cars, Communications, Component and Electronic Repair and Power & Way, in support of scheduled and unscheduled maintenance.

Project justification:
Additional repairable components are required to assure that sufficient parts are on-hand to: 1) replenish decreasing spare pools resulting from attrition and age; 2) support the "Captive Fleet" program, whereby each shop will be allocated a minimum number of repairable components to handle daily maintenance activities; 3) make allowance for the rotation of unserviceable components through the repair shop; 4) achieve the goal of 1% cars awaiting parts; 5) maintain Automatic Fare Collection and Communications equipment; and 6) provide adequate spares to support District maintenance activities in the aftermath of a disaster or an emergency situation.

AUTOMATION OF CASH HANDLING OPERATIONS

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$85,000	$ 0	$85,000	$ 0

Project description:
This project involves the purchase and implementation of a bar code inventory tracking system for the bag, stacker and magazine components of the AFC system.

Project justification:
This project would give BART the ability to easily account for all revenue containers as they move through the cash handling process.

REPLACE HVAC AT CASH HANDLING BUILDING

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$209,000	$ 0	$ 0	$209,000

Project description:
The purpose of this project is to replace the heating, ventilation and air conditioning system in the Cash Handling Building.

Project justification:
The existing HVAC system is old, increasingly unreliable, and energy inefficient. A modern HVAC system would decrease energy consumption and energy cost, while increasing reliability and decreasing maintenance costs.

NEW ADMINISTRATION BUILDING

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$60,000,000	$ 0	$ 0	$60,000,000

Project description:
The purpose of this project is to acquire a new administration building large enough to accommodate all of the District's administrative employees in a centralized location.

Project justification:
It is often necessary for BART employees to conduct business with each other in person. Time and money are wasted as workers travel from BART's various locations throughout Oakland to meet. The acquisition of a new administrative building would improve employees' efficiency and productivity.

V. Operational Efficiencies and Administration

	Funding Req't.	Fiscal Years					
		1993	1994	1995	1996	1997	1998–02
Priority 2							
Repairable components	4,000		4,000				
Automation of cash handling operations	85	85					
Small projects	19,000	1,000	2,000	2,000	2,000	2,000	10,000
Subtotal	23,085	1,085	6,000	2,000	2,000	2,000	10,000
Priority 3							
Replace heating/cooling system at Cash Hdlg. Bldg.	209			209			
New administrative headquarters building	60,000				60,000		
Subtotal	60,209	0	0	209	60,000	0	0
Category Total	83,294	1,085	6,000	2,209	62,000	2,000	10,000

EXTENSIONS

PHASE 1 EXTENSIONS

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$2,583,000,000	$275,054,000	$248,363,000	$2,059,583,000

Project description:
The purpose of the Phase 1 Extensions Program is to expand the BART rail system to areas currently not yet directly served by rail but which pay for service. The areas include eastern Contra Costa and Alameda Counties, southern Alameda County, and San Mateo County. This program includes project planning and environmental review; property acquisition; design and construction of fixed facilities; design, procurement and installation of systems elements; and the purchase of vehicles.

An Environmental Impact Report (EIR) for an extension to Dublin and Pleasanton with a station in Castro Valley was completed in February 1990. An extension to North Concord and West Pittsburg was adopted for implementation with the EIR in November 1988. Likewise the Colma Station extension EIR/EIS was completed in December 1990. All three of these projects are under construction: ground was broken for Dublin/Pleasanton and North Concord/West Pittsburg in October 1991, and Colma construction began in May 1992.

The environmental analysis for an extension to Warm Springs in southern Alameda County was completed in September 1992. Environmental analysis for an extension from Colma Station in San Mateo County to the San Francisco International Airport is currently underway.

Project justification:
With growth in the outlying areas of the Bay Area increasing rapidly, traffic congestion on major freeways is sharply limiting mobility in the region. The rail system extensions will improve regional mobility, reduce future negative air quality impacts associated with traffic congestion, and create focused nodes for transit-based development around the rail stations.

Voters of the District have demonstrated support for this concept of project since the original system was built. The extensions have been mandated by voters through local sales tax measures. Many of the areas which will be served by the extension projects are currently served by local and BART Express Bus service. The extensions will improve customer service for current riders of these bus services. The extensions will support continued BART patronage growth.

PHASE 2 AND 3 EXTENSIONS

OAKLAND AIRPORT INTERMODAL CONNECTOR STUDIES

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$1,500,000	$ 0	$1,500,000	$ 0

Project description:
The purpose of this project is to perform a project update and environmental analysis, and complete a bid package for turnkey development of a fixed-guideway connector from the Oakland Airport/Coliseum BART station to the Oakland Airport (with possible connections to Oakland Coliseum, the Capital Corridor inter-city passenger rail station, and possibly adjacent businesses and hotels).

Project justification:
Completion of these preparatory documents will put the Connector project in line for obtaining funds for construction. Oakland Airport has reached a critical six million passenger level and is now developing master plans that will include a Connector as a solution to limited passenger ground access.

WEST CONTRA COSTA STUDY AA/EIR/EIS

TOTAL EST. COST	PRE-FY 93 FUNDING	FY 93 FUND REQ'T	POST-FY 93 FUNDING
$2,500,000	$ 0	$2,500,000	$ 0

Project description:
The purpose of this project is to perform an Alternatives Analysis (AA) identifying all potential transit modes (BART, commuter rail, busway, etc.).

Project justification:
The I-80 corridor is one of the most congested travelways in the region and the need for transit development has been stated regionally and nationally. Completion of an AA for this corridor would be required to obtain federal funds for transit development after the federal planning process for San Francisco Airport Extension is complete. Only one AA is allowed per region.

OTHER PHASE 2 AND 3 EXTENSION PROJECTS

Planning activities are underway for several BART system extensions beyond those discussed above. For information on these other planned extensions, see the Extension Staging Policy on the following page.

BART EXTENSIONS STAGING POLICY [1]

PHASE	INSIDE CURRENT DISTRICT OR UNDER FUNDING AGREEMENTS
I.	North Concord-West Pittsburg [2]
	Irvington-Warm Springs [8]
	Castro Valley - Dublin [3,8]
	MUNI Metro Extension Project [4]
	Colma-Tanforan-San Francisco Airport [5]
II.	Pittsburg-West Antioch-East Antioch
	Pleasanton-West Livermore-East Livermore [3]
	San Francisco [6]
	San Pablo-Hilltop
	Oakland Airport Connector [7]
III.	San Francisco [6]
	Pinole-Hercules/Rodeo-Crockett
	San Ramon Corridor

NOTES:

1. The several segments shown under each Roman numeral are understood to be implemented concurrently, to the extent that funding is available. BART will be the operator for any new heavy or light rail transit starts or extensions within the three BART counties.
2. To be extended east beyond West Pittsburg as funding permits, per SB 1715 of 1988.
3. Third station may be constructed only with funds additional to those identified in MTC Resolution 1876 (as revised in 1989).
4. The San Francisco Project is identified through coordination with the City and County of San Francisco as the MUNI Metro Extension to the CALTRAIN Depot South of Market.
5. Agreement of February 28, 1990 with SamTrans to proceed with SFO extension, subject to BART project approval.
6. Specific San Francisco Project to be identified through coordination with the City and County of San Francisco. Section 29034.5 of the California Public Utilities Code lists an extension of District services and facilities to the northwest section of the City and County of San Francisco as a District service commitment.
7. A people-mover, or some other mode of travel, to the Oakland Airport to be established before or at the same time as an extension of BART to the San Francisco Airport.
8. Funding from Proposition 116 shall not be allocated to the Warm Springs Extension (WSX) until funding for the Dublin-Pleasanton Extension has been guaranteed.

PHASE	OUTSIDE CURRENT DISTRICT [9]
I.	Milpitas
II.	Millbrae-Menlo Park
	Milpitas-San Jose
III.	Menlo Park-San Jose

9. Subject to a satisfactory cost-sharing arrangement with San Mateo and Santa Clara Counties and project approval by BART. Pursuant to Section 29034.5 of the California Public Utilities Code, only non-District funds may be spent by the District for the purpose of extending services and facilities outside of District's January 1, 1971 boundaries until the District meets specified service commitments within the 1971 boundaries.

VI. Extensions

	Funding Req't.	Fiscal Years 1993	1994	1995	1996	1997	1998–02
Priority 1							
Phase 1 extensions	See Financial Plan						
Priority 3							
Oakland Airpt. project development studies	1,500	1,500					
W. Contra Costa ext. AA/EIR/EIS	2,500	2,500					
Category Total	4,000	4,000	0	0	0	0	0

FINANCIAL PLAN

Funding Needs Summary

Excluding Phase I extension program

		Funding	Fiscal Years					
	Project Category	Req't.	1993	1994	1995	1996	1997	1998–02
I.	Core System Improvements	319,068	16,462	59,546	14,672	127,623	100,765	0
II.	System Rehabilitation							
A.	A and B Car Rehabilitation	440,917	117,000	0	0	200,917	0	123,000
B.	AFC Replacement	40,000	500	8,700	7,500	17,500	5,800	0
C.	Controls and Communication Rehabilitation	29,408	1,525	11,169	13,304	3,260	25	125
D.	Mainline Rehabilitation	69,452	3,069	6,178	5,647	21,476	8,539	24,543
E.	Stations Rehabilitation	58,651	10,487	10,680	10,624	10,353	5,921	10,586
F.	Shops & Yards Rehabilitation	39,879	9,262	21,444	3,158	2,895	463	2,657
G.	Work Equipment Replacement	20,432	1,347	2,856	2,998	1,789	2,427	9,015
	Subtotal	698,739	143,190	61,027	43,231	258,190	23,175	169,926
III.	Safety and Security Program							
A.	Safety Improvements	22,513	5,432	9,711	5,006	0	0	2,364
B.	Seismic Retrofits	181,047	0	3,807	23,860	17,176	17,034	119,170
	Subtotal	203,560	5,432	13,518	28,866	17,176	17,034	121,534
IV.	Service Improvements	94,413	482	13,367	30,736	12,828	6,400	20,600
V.	Operational Efficiencies and Administration	83,294	1,085	6,000	2,209	62,000	2,000	10,000
VI.	Extensions (studies only)	4,000	4,000	0	0	0	0	0
	GRAND TOTALS	1,403,074	170,651	153,458	119,714	477,817	149,374	322,060

NOTES:
All figures in thousands of dollars.
All figures in 1992 dollars, except Core System Improvement Projects and A&B Car Rehabilitation are escalated through years shown.
All figures represent the amount of funding required for obligation in the fiscal year indicated.

Summary of Funding Needs vs. Current Programming

Excluding Phase 1 extension program

	Totals	Fiscal Years					
		1993	1994	1995	1996	1997	1998–02
Funding requirement by fiscal year	1,403,074	170,651	153,458	129,714	477,817	149,374	322,060
Funding Sources							
I. BART Reserves*	44,600	9,862	16,302	8,936	2,400	2,100	5,000
II. MTC Bridge Tolls	10,677	2,257	1,254	0	2,772	2,999	1,395
III. FTA Formula Funds							
A. Section 9	62,677	16,931	10,029	0	11,087	15,559	9,071
B. Section 3	2,400	2,400	0	0	TBD	TBD	TBD
IV. ISTEA Flexible Funds							
A. CMAQ	914	0	914	TBD	TBD	TBD	0
B. STP	2,887	2,887	0	TBD	TBD	TBD	TBD
V. State Funds							
A. TCI	3,737	320	0	1,654	0	0	1,763
B. Prop. 108	15,000	15,000	0	0	0	0	0
C. Partnership	1,510	0	1,510	TBD	TBD	TBD	TBD
Total programmed funds	144,402	49,657	30,009	10,590	16,259	20,658	17,229
SHORTFALL: Requirement less programmed sources	(1,258,672)	(120,994)	(123,449)	(119,124)	(461,558)	(128,716)	(304,831)

*NOTE:
BART Reserves figures include interest earned as projected on the basis of the drawdown schedule shown.
Faster rates of drawdown would result in less interest earned, and therefore less reserves available in total.

Proposed Project Funding By Fund Sources

The pages that follow present BART's current proposal for linking project funding needs to existing funding sources. This proposal is to be considered in the following context:

- The plan showing drawdown and allocation of BART reserves is illustrative only. This plan does not commit BART funds to any particular project or set of projects. Actual future allocations of BART reserves will be largely a function of how BART's needs are funded with non-BART sources through the regional funding processes.

- The plan adheres to the amounts programmed to BART in the current regional funding program for Section 9, CMAQ and STP for those years that are currently fixed, but assumes that those funds could be available for certain qualifying high priority projects, even if the programming in place now does not reflect current BART priorities (some regional programming is based on outdated project priority information). BART will participate in the regional Capital Priorities process as necessary to achieve funding for the most critical qualifying projects.

- The plan presents BART's view of reasonable allocations of Section 9, STP and CMAQ funds beyond the period already fixed in the regional program. Additional detail will be provided during the next Capital Priorities process cycle.

- The program as presented is "needs-driven" rather than "funding availability driven" That is, the plan presents project funding needs in the year(s) in which they *should* be implemented to rehabilitate and improve the physical plant in an orderly and business-like way. This would avoid approaching the point of failure for any subsystem, along with possible impacts on service levels and/or patronage. Any project not funded in the year indicated as needed will roll into the next year, and so on until funding becomes available. The effect of this rolling-over into outyears depends on the nature and criticality of each project.

RESERVES AVAILABLE FOR PROGRAMMING TO PROJECTS*

all figures in thousands of dollars

	FY93	FY94	FY95	FY96	FY97	FY98-02
Beginning Balances	22,500	18,638	6,336	0	0	0
Interest Earnings**	6,000	4,000	2,600	2,400	2,100	5,000
Total Drawdowns	9,862	16,302	8,936	2,400	2,100	5,000
Remaining Balances	18,638	6,336	0	0	0	0

NOTES:

* Does not include a $54 million fund set up through a bond issue in FY92 as a self-insurance reserve fund which cannot be allocated to project funding.

** The interest earned as shown is related to the drawdown shedule. If reserves are drawn down faster, then the amount of interest and therefore the total amount of reserves available, will be less.

BART FY 93 Ten-Year Capital Program

all figures in thousands of dollars

Fiscal Year 1993 Fund Commitment Needed	FY 93 Need	BART Reserves	Fed. STP	Fed. CMAQ	FTA Sec. 3	FTA Sec. 9	State 108	State TSM	Bridge Tolls	Other TBD
Priority 1										
Core System Improvements										
Next. gen. control system essential	2,042	2,042								
Replace existing radio network	6,600									6,600
Train destination identification enhance.	820	820								
A-line wayside train control	1,000	1,000								
A-line traction power improvements	6,000	6,000								
Subtotals	16,462	9,862	0	0	0	0	0	0	0	6,600
Service Improvements										
Key stations	482					434			48	
System Rehabilitation										
A&B car rehab phase II-A	117,000				81,600		15,000			20,400
AFC replacement	500					400			100	
Mainline rehab	1,900					1,520			380	
Stations rehab	6,471					5,177			1,294	
Shops & yards rehab	549					439			110	
Subtotals	126,420	0	0	0	81,600	7,536	15,000	0	1,884	20,400
Safety Improvements	2,045					1,636			409	
Priority 2										
System Rehabilitation										
Controls & communications rehab	1,329					1,063			266	
Mainline rehab	1,127					902			225	
Stations rehab	2,382					1,906			476	
Shops & yards rehab	6,879					3,453			746	2,680
Work equipment replacement	533									533
Subtotals	12,250	0	0	0	0	7,323	0	0	1,713	3,214

Fiscal Year 1993 continued Fund Commitment Needed	FY 93 Need	BART Reserves	Fed. STP	Fed. CMAQ	FTA Sec. 3	FTA Sec. 9	State 108	State TSM	Bridge Tolls	Other TBD
Safety Improvements	3,387									3,387
Operational Efficiences & Capital Admin.	1,085									1,085
Priority 3										
System Rehabilitation										
Controls & communications rehab	196									196
Stations rehab	1,634									1,634
Shops & yards rehab	620									620
Work equipment replacement	683									683
Subtotals	3,133	0	0	0	0	0	0	0	0	3,133
Extensions										
Oakland Airport project development	1,500									1,500
W. Contra Costa exten. AA/EIR/EIS	2,500									2,500
Subtotals	4,000	0	0	0	0	0	0	0	0	4,000
Priority 4										
System Rehabilitation										
Mainline rehab	42									42
Shops & yards rehab	1,074									1,074
Work equipment replacement	131									131
Subtotals	1,247	0	0	0	0	0	0	0	0	1,247
Priority 5										
System Rehabilitation										
Shops & yards rehab	140									
FY 93 TOTALS	170,651	9,862	0	0	81,600	16,929	15,000	0	4,054	43,066

BART FY 93 Ten-Year Capital Program

all figures in thousands of dollars

Fiscal Year 1994 Fund Commitment Needed	FY 94 Need	BART Reserves	Fed. STP	Fed. CMAQ	FTA Sec. 3	FTA Sec. 9	State 108	State TSM	Bridge Tolls	Other TBD
Priority 1										
Core System Improvements										
Next. gen. control system essential	3,415	3,415								
Replace existing radio network	15,000									15,000
Train destination identification enhance.	3,000	3,000								
A-line wayside train control	9,887	9,887								
A-line traction power improvements	26,137									26,137
Subtotals	57,439	16,302	0	0	0	0	0	0	0	41,137
Service Improvements										
Key stations improvements	1,270					1,143			127	
System Rehabilitation										
AFC replacement	8,700					6,960			1,740	
Controls & communications rehab	1,500					1,200			300	
Mainline rehab	3,931					1,869			466	1,596
Stations rehab	3,180									3,180
Shops & yards rehab	249									249
Subtotals	17,560	0	0	0	0	10,029	0	0	2,506	5,025
Safety Improvements	2,813		2,080					520		213
Priority 2										
System Rehabilitation										
Controls & communications rehab	4,449									4,449
Mainline rehab	1,305									1,305
Stations rehab	6,274									6,274
Shops & yards rehab	6,900									6,900
Work equipment replacement	482									482
Subtotals	19,410	0	0	0	0	0	0	0	0	19,410

Fiscal Year 1994 continued Fund Commitment Needed	FY 94 Need	BART Reserves	Fed. STP	Fed. CMAQ	FTA Sec. 3	FTA Sec. 9	State 108	State TSM	Bridge Tolls	Other TBD
Safety Improvements	6,898									6,898
Seismic Retrofits	3,773									3,773
Operational Efficiencies & Capital Adm.	6,000									6,000
Priority 3										
Core System Improvements										
Next gen. control signhead replacement	2,107									2,107
System Rehabilitation										
Controls & communications rehab	5,220									5,220
Mainline rehab	700									700
Stations rehab	1,226									1,226
Shops & yards rehab	5,431									5,431
Work equipment replacement	2,094									2,094
Subtotals	14,671	0	0	0	0	0	0	0	0	14,671
Seismic Retrofits	34									34
Service Improvements	12,097		805	914				430		9,948
Priority 4										
System Rehabilitation										
Mainline rehab	242									242
Shops & yards rehab	7,529									7,529
Work equipment replacement	59									59
Subtotals	7,830	0	0	0	0	0	0	0	0	7,830

Fiscal Year 1994 continued Fund Commitment Needed	FY 94 Need	BART Reserves	Fed. STP	Fed. CMAQ	FTA Sec. 3	FTA Sec. 9	State 108	State TSM	Bridge Tolls	Other TBD
Priority 5										
System Rehabilitation										
Shops & yards rehab	1,335									1,335
Work equipment replacement	221									221
Subtotals	1,556	0	0	0	0	0	0	0	0	1,556
FY 94 TOTALS	153,458	16,302	2,885	914	0	11,172	0	950	2,633	118,602

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BART FY 93 Ten-Year Capital Program

all figures in thousands of dollars

Fiscal Year 1995 Fund Commitment Needed	FY 95 Need	BART Reserves	Fed. STP	Fed. CMAQ	FTA Sec. 3	FTA Sec. 9	State 108	State TSM	Bridge Tolls	Other TBD
Priority 1										
Core System Improvements										
Next. gen. control system essential	4,508	4,508								
Replace existing radio network	7,350									7,350
Train destination identification enhance.	707	707								
Subtotals	12,565	5,215	0	0	0	0	0	0	0	7,350
System Rehabilitation										
AFC replacement	17,500		14,000					3,500		
Mainline rehab	1,858		1,486					372		
Stations rehab	2,020		1,616					404		
Shops & yards rehab	91		73					18		
Subtotals	21,469	0	17,175	0	0	0	0	4,294	0	0
Priority 2										
System Rehabilitation										
Controls & communications rehab	25		20					5		
Mainline rehab	2,955		2,364					591		
Stations rehab	7,307		5,846					1,461		
Shops & yards rehab	1,165		932					233		
Work equipment replacement	2,749	2,749								0
Subtotals	14,201	2,749	9,162	0	0	0	0	2,290	0	0
Safety Improvements	5,006	972								4,034
Seismic Retrofits	23,826									23,826
Operational Efficiencies & Capital Adm.	2,000									2,000

Fiscal Year 1995 continued Fund Commitment Needed	FY 95 Need	BART Reserves	Fed. STP	Fed. CMAQ	FTA Sec. 3	FTA Sec. 9	State 108	State TSM	Bridge Tolls	Other TBD
Priority 3										
Core System Improvements										
Next gen. control signhead replacement	2,107									2,107
System Rehabilitation										
Controls & communications rehab	9,573									9,573
Mainline rehab	350									350
Stations rehab	1,297									1,297
Shops & yards rehab	1,528									1,528
Work equipment replacement	201									201
Subtotals	12,949	0	0	0	0	0	0	0	0	12,949
Seismic Retrofits	34									34
Service Improvements	31,182									31,182
Operational Efficiencies & Capital Adm.	209									209
Priority 4										
System Rehabilitation										
Controls & communications rehab	3,706									3,706
Mainline rehab	484									484
Shops & yards rehab	288									288
Work equipment replacement	48									48
Subtotals	4,526	0	0	0	0	0	0	0	0	4,526
Priority 5										
System Rehabilitation										
Shops & yards rehab	86									
FY 95 TOTALS	130,160	8,936	26,337	0	0	0	0	6,584	0	88,217

BART FY 93 Ten-Year Capital Program

all figures in thousands of dollars

Fiscal Year 1996 Fund Commitment Needed	FY 96 Need	BART Reserves	Fed. STP	Fed. CMAQ	FTA Sec. 3	FTA Sec. 9	State 108	State TSM	Bridge Tolls	Other TBD
Priority 1										
Core System Improvements										
Next. gen. control system essential	2,050	2,050								
System Rehabilitation										
A&B car rehab phase II-B	200,917				160,734					40,183
AFC replacement	17,500		14,000					3,500		
Mainline rehab	14,479	350				7,500			1,875	4,754
Stations rehab	520					416			104	
Shops & yards rehab	91					73			18	
Subtotals	233,507	350	14,000	0	160,734	7,989	0	3,500	1,997	44,937
Priority 2										
Core System Improvements										
New transit vehicles	71,000									71,000
M-line traction power improvements	29,050									29,050
C-line traction power improvements	24,150									24,150
Subtotals	124,200	0	0	0	0	0	0	0	0	124,200
System Rehabilitation										
Controls & communications rehab	3,025		2,420					605		
Mainline rehab	6,235		4,988					1,247		
Stations rehab	6,338		5,070					1,268		
Shops & yards rehab	1,350					1,080			270	
Work equipment replacement	1,602					1,282			320	
Subtotals	18,550	0	12,478	0	0	2,362	0	3,120	590	
Seismic Retrofits	17,142									17,142
Operational Efficiencies & Capital Adm.	2,000									2,000

Fiscal Year 1996 continued Fund Commitment Needed	FY 96 Need	BART Reserves	Fed. STP	Fed. CMAQ	FTA Sec. 3	FTA Sec. 9	State 108	State TSM	Bridge Tolls	Other TBD
Priority 3										
Core System Improvements										
Next gen. control signhead replacement	1,373					736			184	453
System Rehabilitation										
Controls & communications rehab	235									235
Mainline rehab	350									350
Stations rehab	3,114									3,114
Shops & yards rehab	1,454									1,454
Work equipment replacement	157									157
Subtotals	5,310	0	0	0	0	0	0	0	0	5,310
Seismic Retrofits	34									34
Service Improvements	12,828									12,828
Operational Efficiencies & Capital Adm.	60,000									60,000
Priority 4										
System Rehabilitation										
Mainline rehab	412									412
Stations rehab	381									381
Work equipment replacement	30									30
Subtotals	823	0	0	0	0	0	0	0	0	823
FY 96 TOTALS	477,817	2,400	26,478	0	160,734	11,086	0	6,620	2,771	267,727

BART FY 93 Ten-Year Capital Program

all figures in thousands of dollars

Fiscal Year 1997 Fund Commitment Needed	FY 97 Need	BART Reserves	Fed. STP	Fed. CMAQ	FTA Sec. 3	FTA Sec. 9	State 108	State TSM	Bridge Tolls	Other TBD
Priority 1										
Core System Improvements										
Next. gen. control system essential	1,965	1,965								
System Rehabilitation										
AFC replacement	5,800		4,640					1,160		
Mainline rehab	2,296		1,837					459		
Stations rehab	520		416					104		
Shops & yards rehab	91		73					18		
Subtotals	8,707	0	6,966	0	0	0	0	1,741	0	
Priority 2										
Core System Improvements										
M-line traction power improvements	53,950									53,950
C-line traction power improvements	44,850									44,850
Subtotals	98,800	0	0	0	0	0	0	0	0	98,800
System Rehabilitation										
Controls & communications rehab	25		20					5		
Mainline rehab	5,375		4,300					1,075		
Stations rehab	2,095					1,676			419	
Shops & yards rehab	282					226			56	
Work equipment replacement	2,061					1,649			412	
Subtotals	9,838	0	4,320	0	0	3,550	0	1,080	888	0
Seismic Retrofits	17,000	135				7,500			1,875	7,490
Operational Efficiencies & Capital Adm.	2,000									2,000

Fiscal Year 1997 continued Fund Commitment Needed	FY 97 Need	BART Reserves	Fed. STP	Fed. CMAQ	FTA Sec. 3	FTA Sec. 9	State 108	State TSM	Bridge Tolls	Other TBD
Priority 3										
System Rehabilitation										
Mainline rehab	350					280			70	
Stations rehab	953					762			191	
Shops & yards rehab	90					72			18	
Work equipment replacement	264					211			53	
Subtotals	1,657	0	0	0	0	1,326	0	0	331	
Seismic Retrofits	34									34
Priority 4										
System Rehabilitation										
Mainline rehab	518									518
Stations rehab	2,353									2,353
Work equipment replacement	37									37
Subtotals	2,908	0	0	0	0	0	0	0	0	2,908
Service Improvements										
Station entrance canopies	6,400									6,400
Priority 5										
Work equipment replacement	65									65
FY97 TOTALS	149,374	2,100	11,286	0	0	12,376	0	2,821	3,094	117,697

BART FY 93 Ten-Year Capital Program

all figures in thousands of dollars

Fiscal Year 1998-2002 Fund Commitment Needed	5-Yr. Need	BART Reserves	Fed. STP	Fed. CMAQ	FTA Sec. 3	FTA Sec. 9	State 108	State TSM	Bridge Tolls	Other TBD
Priority 1										
System Rehabilitation										
A&B car rehab phase II-B	123,000	5,000			98,400					19,600
Mainline rehab	6,734		5,387					1,347		
Stations rehab	2,600		2,080					520		
Shops & yards rehab	198		158					40		
Subtotals	132,532	5,000	7,626	0	98,400	0	0	1,906	0	19,600
Safety Improvements	2,364		1,891					473		
Priority 2										
System Rehabilitation										
Controls & communications rehab	125		100					25		
Mainline rehab	16,960		13,568					3,392		
Stations rehab	6,450		5,160					1,290		
Shops & yards rehab	2,355					1,884			471	
Work equipment replacement	7,922					6,338			1,584	
Subtotals	33,812	0	18,828	0	0	8,222	0	4,707	2,055	
Seismic Retrofits	119,000					7,500			1,875	109,625
Operational Efficiencies & Capital Adm.	10,000									10,000
Priority 3										
System Rehabilitation										
Stations rehab	1,536					1,229			307	
Shops & yards rehab	92					74			18	
Work equipment replacement	979					783			196	
Subtotals	2,607	0	0	0	0	2,086	0	0	521	

Fiscal Year 1998-2002 continued Fund Commitment Needed	5-Yr. Need	BART Reserves	Fed. STP	Fed. CMAQ	FTA Sec. 3	FTA Sec. 9	State 108	State TSM	Bridge Tolls	Other TBD
Seismic Retrofits	170									170
Priority 4										
System Rehabilitation										
Mainline rehab	849					679			170	
Work equipment replacement	114					91			23	
Subtotals	963	0	0	0	0	770	0	0	193	
Service improvements										
Station entrance canopies	20,600									20,600
Priority 5										
Shops & yards rehab	12									12
FIVE YEAR TOTALS	322,060	5,000	28,345	0	98,400	18,578	0	7,086	4,644	160,007

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Extensions Expenditure Schedule Summaries

Run date: 26-Sep-92
Version 29-Aa

DUBLIN/PLEASANTON EXTENSION (DP ($000s)

EXPENDITURES BY TASK - ESCALATED Data date: March, 1992

	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Total
Enviro & Liasion	9	9	12	186	605	83	269	1151	225	14337	10280	0	0	0	0	0	0	27167
PE & Eng	219	120	130	1281	4165	7925	26197	7899	8085	10563	4060	0	0	0	0	0	0	70645
ROW & Agreements	2213	11359	17	183	735	5010	6482	3878	0	0	0	0	0	0	0	0	0	29877
Procur & Const	0	0	0	0	0	0	2833	76955	106317	103955	30952	0	0	0	0	0	0	321011
Vehicles	0	0	0	0	0	0	1897	7364	21116	25609	12513	0	0	0	0	0	0	68500
Total	2441	11488	160	1650	5504	13019	37678	97247	135743	154464	57805	0	0	0	0	0	0	517200
Financing Costs	0	0	0	0	0	0	0	0	0	0	877	643	391	131	0	0	0	2042
Grand Total	2441	11488	160	1650	5504	13019	37678	97247	135743	154464	58682	643	391	131	0	0	0	519242

Run date: 26-Sep-92
Version 29-Aa

PITTSBURG/ANTIOCH EXTENSION (PAX)
CASH FLOW SCHEDULE
($000s)

EXPENDITURES BY TASK - ESCALATED   Data date: March, 1992

	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	**Total**
Enviro & Liasion	18	0	12	36	35	17	96	1987	0	0	0	0	0	0	0	0	0	**2200**
PE & Eng	1	2	17	23	3900	7543	19496	9413	10170	13727	11419	4531	0	0	0	0	0	**80242**
ROW & Agreements	2814	240	103	424	1242	1263	34275	3682	24156	0	0	0	0	0	0	0	0	**68200**
Procur & Const	0	0	0	0	0	0	4470	48712	120422	82432	57354	4509	0	0	0	0	0	**317900**
Vehicles	0	0	0	0	0	0	1069	3485	8023	10496	14127	0	0	0	0	0	0	**37200**
Total	**2833**	**242**	**132**	**482**	**5176**	**8823**	**59407**	**67279**	**162771**	**106655**	**82900**	**9040**	**0**	**0**	**0**	**0**	**0**	**505742**
Financing Costs	0	0	0	0	0	0	0	0	0	211	1597	2355	1784	1274	899	594	30	**8743**
Grand Total	**2833**	**242**	**132**	**482**	**5176**	**8823**	**59407**	**67279**	**162771**	**106866**	**84497**	**11395**	**1784**	**1274**	**899**	**594**	**30**	**514484**

Run date 08-Dec-92
Version 30A
EXPENDITURES BY TASK - ESCALATED

Data date: June, 1992

WARM SPRINGS EXTENSION (WSX)
CASH FLOW SCHEDULE
($000s)

	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	**TOTAL**
Enviro & Liasion	199	98	299	127	360	99	186	0	1676	1000	1000	1000	1000	0	0	0	0	**7044**
PE & Eng	0	0	0	0	3671	2307	3237	4553	14305	37348	13218	9276	2110	0	0	0	0	**90025**
ROW & Agreements	2737	9688	4595	180	72	594	2	1295	40797	45865	0	0	0	0	0	0	0	**105825**
Procur & Const	0	0	0	0	0	0	652	912	10789	15210	40517	135252	40000	39552	0	0	0	**282884**
Vehicles	0	0	0	0	0	0	117	9	0	11924	35088	7869	0	0	0	0	0	**55007**
Total	**2936**	**9786**	**4894**	**307**	**4103**	**3000**	**4194**	**6769**	**67567**	**111347**	**89823**	**153397**	**43110**	**39552**	**0**	**0**	**0**	**540785**

Run date: 26-Sep-92
Version 29-Aa

COLMA EXTENSION (CSX)
CASH FLOW SCHEDULE
($000s)

EXPENDITURES BY TASK - ESCALATED

	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	Prj Tot
CSX																	
Enviro & Liason	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PE & Eng	0	0	0	0	486	2827	8135	9559	8735	9125	1400	0	0	0	0	0	40267
ROW & Agreements	0	0	0	0	0	179	0	7073	2005	0	0	0	0	0	0	0	9257
Procur & Const	0	0	0	0	0	0	402	28675	49215	39208	3155	0	0	0	0	0	120655
Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**486**	**3006**	**8537**	**45307**	**59955**	**48333**	**4555**	**0**	**0**	**0**	**0**	**0**	**170179**

Run date: 26-Sep-92
Version 29-Aa

SAN FRANCISCO EXTENSION W/ OUT COLMA
Based on 09/90 STIP Adoption and MTC Resolution #1876.
Escalated

EXPENDITURES BY TASK - ESCALATED

	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Total
Enviro & Liasion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PE & Eng	0	0	0	0	0	0	0	19445	21249	19220	12349	12651	13284	13948	14645	5791	0	132582
ROW & Agreements	0	0	0	0	0	0	0	12316	28959	0	0	0	0	0	0	0	0	41275
Procur & Const	0	0	0	0	0	0	0	0	0	31237	122357	131691	147500	86581	55187	9068	0	583621
Vehicles	0	0	0	0	0	0	0	0	0	44995	45896	709	0	0	0	0	0	91600
Total	0	0	0	0	0	0	0	31761	50208	95452	180602	145051	160784	100529	69832	14859	0	849078

Details of Extensions Funding Program

Run date: 26-Sep-92
Version 29-Aa

DUBLIN/PLEASANTON EXTENSION (DPX)
CASH FLOW SCHEDULE
($000s)

FUND TRANSFER AGREEMENT AMOUNTS

Source	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Project Total
PROGRAMMED																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	0	0	2447	4045	1530	0	0	0	0	0	0	0	0	8022
State TCI-TP&D	0	0	0	0	0	0	0	7030	8406	0	0	0	0	0	0	0	0	15436
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	59000	0	0	0	0	0	0	0	0	0	59000
Bridge Tolls	0	0	0	0	0	0	0	5799	4710	4710	4710	4710	4710	4494	0	0	0	33843
Alameda	0	0	0	0	0	0	0	36571	39916	73513	0	0	0	0	0	0	0	150000
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	0	0	0	0	23331	0	0	0	0	0	0	23331
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	2447	112445	54562	78223	28041	4710	4710	4494	0	0	0	289632
EXISTING																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	2826	0	2459	1563	0	0	0	0	0	0	0	0	0	0	0	6848
State TCI-TP&D	0	0	0	6832	0	652	0	0	0	0	0	0	0	0	0	0	0	7484
Prop 108 Rail Bonds	0	0	0	0	0	0	38464	59536	0	0	0	0	0	0	0	0	0	98000
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	2100	0	10856	0	3601	0	0	0	0	0	0	0	0	0	16557
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	5610	0	46050	0	0	0	0	0	0	0	0	0	0	51660
SFO Ext Fund Transfer	0	0	0	0	0	204	315	0	0	0	0	0	0	0	0	0	0	519
Cash BART	58	471	80	825	2752	6638	22275	0	0	0	0	0	0	0	0	0	0	33099
Property BART	2383	11017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13400
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	2441	11488	2906	9757	10821	19914	68640	0	0	0	0	0	0	0	0	0	0	227567
TOTAL																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	2826	0	2459	1563	2447	4045	1530	0	0	0	0	0	0	0	0	14870
State TCI-TP&D	0	0	0	6832	0	652	0	7030	8406	0	0	0	0	0	0	0	0	22920
Prop 108 Rail Bonds	0	0	0	0	0	0	38464	59536	0	0	0	0	0	0	0	0	0	98000
Prop 116 Rail Bonds	0	0	0	0	0	0	0	59000	0	0	0	0	0	0	0	0	0	59000
Bridge Tolls	0	0	0	2100	0	10856	0	9400	4710	4710	4710	4710	4710	4494	0	0	0	50400
Alameda	0	0	0	0	0	0	0	36571	39916	73513	0	0	0	0	0	0	0	150000
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	5610	0	46050	0	0	0	23331	0	0	0	0	0	0	74991
SFO Ext Fund Transfer	0	0	0	0	0	204	315	0	0	0	0	0	0	0	0	0	0	519
Cash BART	58	471	80	825	2752	6638	22275	0	0	0	0	0	0	0	0	0	0	33099
Property BART	2383	11017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13400
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLUMN TOTALS	2441	11488	2906	9757	10821	19914	109551	175582	54562	78223	28041	4710	4710	4494	0	0	0	517200

EXPENSES

DUBLIN/PLEASANTON EXTENSION (DP ($000s)

Source	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Project Total
PROGRAMMED																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	0	0	450	1400	6125	47	0	0	0	0	0	0	0	8022
State TCI-TP&D	0	0	0	0	0	0	0	100	14072	1264	0	0	0	0	0	0	0	15436
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	9768	49232	0	0	0	0	0	0	0	59000
Bridge Tolls	0	0	0	0	0	0	0	0	784	8210	24850	0	0	0	0	0	0	33843
Alameda	0	0	0	0	0	0	0	36571	39916	73513	0	0	0	0	0	0	0	150000
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	0	0	0	0	23331	0	0	0	0	0	0	23331
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	0	0	0	0	0	0	450	38071	70665	132266	48181	0	0	0	0	0	0	289632
EXISTING																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	80	825	1921	701	831	690	1800	0	0	0	0	0	0	0	0	6848
State TCI-TP&D	0	0	0	0	831	5680	538	0	0	435	0	0	0	0	0	0	0	7484
Prop 108 Rail Bonds	0	0	0	0	0	0	0	49187	35878	11096	1839	0	0	0	0	0	0	98000
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	8313	2033	6211	0	0	0	0	0	0	0	0	16557
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	0	7266	21215	10667	12512	0	0	0	0	0	0	51660
SFO Ext Fund Transfer	0	0	0	0	0	0	519	0	0	0	0	0	0	0	0	0	0	519
Cash BART	58	471	80	825	2752	6638	22275	0	0	0	0	0	0	0	0	0	0	33099
Property BART	2383	11017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13400
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	2441	11488	160	1650	5504	13019	32476	59176	65104	22198	14351	0	0	0	0	0	0	227567
TOTAL																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	80	825	1921	701	1281	2090	7925	47	0	0	0	0	0	0	0	14870
State TCI-TP&D	0	0	0	0	831	5680	538	100	14072	1699	0	0	0	0	0	0	0	22920
Prop 108 Rail Bonds	0	0	0	0	0	0	0	49187	35878	11096	1839	0	0	0	0	0	0	98000
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	9768	49232	0	0	0	0	0	0	0	59000
Bridge Tolls	0	0	0	0	0	0	8313	2033	6994	8210	24850	0	0	0	0	0	0	50400
Alameda	0	0	0	0	0	0	0	36571	39916	73513	0	0	0	0	0	0	0	150000
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	0	7266	21215	10667	35843	0	0	0	0	0	0	74991
SFO Ext Fund Transfer	0	0	0	0	0	0	519	0	0	0	0	0	0	0	0	0	0	519
Cash BART	58	471	80	825	2752	6638	22275	0	0	0	0	0	0	0	0	0	0	33099
Property BART	2383	11017	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13400
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLUMN TOTALS	2441	11488	160	1650	5504	13019	32926	97247	135768	154464	62532	0	0	0	0	0	0	517200

Run date: 26-Sep-92
Version 29-Aa

PITTSBURG/ANTIOCH EXTENSION (PAX)
CASH FLOW SCHEDULE
($000s)

FUND TRANSFER AGREEMENT AMOUNTS

Source	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Project Total
PROGRAMMED																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	0	0	0	1446	6696	0	0	0	0	0	0	0	0	8142
State TCI-TP&D	0	0	0	0	0	0	4729	1605	9538	9623	6061	2068	0	0	0	0	0	33624
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	3435	2790	2790	2790	2790	2790	2790	2790	2790	8407	34162
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	4351	22110	4862	0	0	0	0	0	0	0	31323
SamTrans BART Buy-In	0	0	0	0	0	0	0	0	0	0	34274	11400	3468	0	0	0	7188	56330
SFO Ext Fund Transfer	0	0	0	0	0	0	0	2368	4808	6388	8614	6745	7476	4675	3247	691	0	45011
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	**0**	**0**	**0**	**0**	**0**	**0**	**4729**	**13205**	**45942**	**23663**	**51739**	**23003**	**13734**	**7465**	**6037**	**3481**	**15595**	**208592**
EXISTING																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	3674	5547	2038	3794	0	0	0	0	0	0	0	0	0	0	0	15053
State TCI-TP&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	23800	11200	0	0	0	0	0	0	0	0	0	35000
Prop 116 Rail Bonds	0	0	0	0	0	0	35500	0	0	0	0	0	0	0	0	0	0	35500
Bridge Tolls	0	0	0	2325	0	7620	0	3435	0	0	0	0	0	0	0	0	0	13380
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	14400	0	105600	0	0	0	0	0	0	0	0	0	120000
SamTrans BART Buy-In	0	0	0	0	3720	0	33480	0	0	0	0	0	0	0	0	0	0	37200
SFO Ext Fund Transfer	0	0	0	0	0	131	578	504	0	0	0	0	0	0	0	0	0	1213
Cash BART	18	175	66	241	2902	4945	11530	17045	0	0	0	0	0	0	0	0	0	36922
Property BART	2814	68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2882
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	**2832**	**243**	**3740**	**8113**	**8660**	**30890**	**104888**	**137784**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**297150**
TOTAL																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	3674	5547	2038	3794	0	1446	6696	0	0	0	0	0	0	0	0	23195
State TCI-TP&D	0	0	0	0	0	0	4729	1605	9538	9623	6061	2068	0	0	0	0	0	33624
Prop 108 Rail Bonds	0	0	0	0	0	0	23800	11200	0	0	0	0	0	0	0	0	0	35000
Prop 116 Rail Bonds	0	0	0	0	0	0	35500	0	0	0	0	0	0	0	0	0	0	35500
Bridge Tolls	0	0	0	2325	0	7620	0	6870	2790	2790	2790	2790	2790	2790	2790	2790	8407	47541
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	14400	0	109951	22110	4862	0	0	0	0	0	0	0	151323
SamTrans BART Buy-In	0	0	0	0	3720	0	33480	0	0	0	34274	11400	3468	0	0	0	7188	93530
SFO Ext Fund Transfer	0	0	0	0	0	131	578	2872	4808	6388	8614	6745	7476	4675	3247	691	0	46224
Cash BART	18	175	66	241	2902	4945	11530	17045	0	0	0	0	0	0	0	0	0	36922
Property BART	2814	68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2882
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLUMN TOTALS	**2832**	**243**	**3740**	**8113**	**8660**	**30890**	**109617**	**150989**	**45942**	**23663**	**51739**	**23003**	**13734**	**7465**	**6037**	**3481**	**15595**	**505742**

EXPENSES

PITTSBURG/ANTIOCH EXTENSION (PAX ($000s)

Source	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Project Total
PROGRAMMED																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	0	0	0	289	7853	0	0	0	0	0	0	0	0	8142
State TCI-TP&D	0	0	0	0	0	0	4729	0	10224	14852	3819	0	0	0	0	0	0	33624
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	29667	0	4519	0	0	0	0	0	34186
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	17518	13805	0	0	0	0	0	0	0	31323
SamTrans BART Buy-In	0	0	0	0	0	0	0	0	0	10496	45834	0	0	0	0	0	0	56330
SFO Ext Fund Transfer	0	0	0	0	0	0	0	2368	4808	5662	27652	4521	0	0	0	0	0	45011
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	**0**	**0**	**0**	**0**	**0**	**0**	**4729**	**2657**	**40403**	**74482**	**77305**	**9040**	**0**	**0**	**0**	**0**	**0**	**208617**
EXISTING																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	66	241	2588	4409	7749	0	0	0	0	0	0	0	0	0	0	15053
State TCI-TP&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	0	18670	11120	5210	0	0	0	0	0	0	0	35000
Prop 116 Rail Bonds	0	0	0	0	0	0	0	11459	13175	10866	0	0	0	0	0	0	0	35500
Bridge Tolls	0	0	0	0	0	0	5232	0	0	8123	0	0	0	0	0	0	0	13355
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	2208	12192	16233	89367	0	0	0	0	0	0	0	0	120000
SamTrans BART Buy-In	0	0	0	0	0	0	14215	2414	8023	6954	5595	0	0	0	0	0	0	37200
SFO Ext Fund Transfer	0	0	0	0	0	0	709	0	504	0	0	0	0	0	0	0	0	1213
Cash BART	18	175	66	241	2589	2206	14582	15846	179	1020	0	0	0	0	0	0	0	36922
Property BART	2814	68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2882
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	**2832**	**243**	**132**	**482**	**5177**	**8823**	**54678**	**64622**	**122368**	**32173**	**5595**	**0**	**0**	**0**	**0**	**0**	**0**	**297125**
TOTAL																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	66	241	2588	4409	7749	289	7853	0	0	0	0	0	0	0	0	23195
State TCI-TP&D	0	0	0	0	0	0	4729	0	10224	14852	3819	0	0	0	0	0	0	33624
Prop 108 Rail Bonds	0	0	0	0	0	0	0	18670	11120	5210	0	0	0	0	0	0	0	35000
Prop 116 Rail Bonds	0	0	0	0	0	0	0	11459	13175	10866	0	0	0	0	0	0	0	35500
Bridge Tolls	0	0	0	0	0	0	5232	0	0	37790	0	4519	0	0	0	0	0	47541
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	2208	12192	16233	106885	13805	0	0	0	0	0	0	0	151323
SamTrans BART Buy-In	0	0	0	0	0	0	14215	2414	8023	17450	51429	0	0	0	0	0	0	93530
SFO Ext Fund Transfer	0	0	0	0	0	0	709	2368	5312	5662	27652	4521	0	0	0	0	0	46224
Cash BART	18	175	66	241	2589	2206	14582	15846	179	1020	0	0	0	0	0	0	0	36922
Property BART	2814	68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2882
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLUMN TOTALS	**2832**	**243**	**132**	**482**	**5177**	**8823**	**59407**	**67279**	**162771**	**106655**	**82900**	**9040**	**0**	**0**	**0**	**0**	**0**	**505742**

Run date: 08-Dec-92
Version 30A

WARM SPRINGS EXTENSION (WSX)
CASH FLOW SCHEDULE
($000s)

FUND TRANSFER AGREEMENT AMOUNTS

Source	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Project Total
PROGRAMMED																		
State - FCR	0	0	0	0	0	0	0	0	0	0	0	0	11000	14000	15000	15000	0	55000
State-Local Prtnrshp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	2200	2035	808	0	10574	2766	6035	14683	11334	0	0	0	0	0	50435
State TCI-TP&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	29000	0	29000	0	0	0	0	0	0	58000
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	1084	0	0	0	0	0	245	4710	4710	18087	28836
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	0	0	0	0	33675	19244	5854	0	0	0	12135	70908
SFO Ext Fund Transfer	0	0	0	0	0	0	0	4396	8117	10785	14541	11387	12622	7892	5482	1166	0	76388
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	**0**	**0**	**0**	**2200**	**2035**	**808**	**0**	**16054**	**39883**	**16820**	**91899**	**41965**	**29476**	**22137**	**25192**	**20876**	**30222**	**339567**
EXISTING																		
State - FCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State-Local Prtnrshp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	4395	1669	0	0	0	0	0	0	0	0	0	0	0	0	0	6064
State TCI-TP&D	0	0	1632	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1632
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	1824	0	2007	0	1084	0	0	0	0	0	0	0	0	0	4916
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	670	0	9000	0	0	0	0	0	0	0	0	0	0	9670
SFO Ext Fund Transfer	0	0	0	0	0	16	661	453	0	0	0	0	0	0	0	0	0	1130
Cash BART	206	78	0	57	2052	538	692	656	0	0	0	0	0	0	0	0	0	4278
Property BART	2730	9708	4402	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16840
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	**2936**	**9786**	**10429**	**3550**	**2722**	**2561**	**10353**	**2193**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**44530**
TOTAL																		
State - FCR	0	0	0	0	0	0	0	0	0	0	0	0	11000	14000	15000	15000	0	55000
State-Local Prtnrshp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	4395	3869	2035	808	0	10574	2766	6035	14683	11334	0	0	0	0	0	56499
State TCI-TP&D	0	0	1632	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1632
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	29000	0	29000	0	0	0	0	0	0	58000
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	1824	0	2007	0	2169	0	0	0	0	0	245	4710	4710	18087	33752
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	670	0	9000	0	0	0	33675	19244	5854	0	0	0	12135	80578
SFO Ext Fund Transfer	0	0	0	0	0	16	661	4849	8117	10785	14541	11387	12622	7892	5482	1166	0	77518
Cash BART	206	78	0	57	2052	538	692	656	0	0	0	0	0	0	0	0	0	4278
Property BART	2730	9708	4402	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16840
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLUMN TOTALS	**2936**	**9786**	**10429**	**5750**	**4757**	**3369**	**10353**	**18247**	**39883**	**16820**	**91899**	**41965**	**29476**	**22137**	**25192**	**20876**	**30222**	**384097**

EXPENSES

WARM SPRINGS EXTENSION (WSX) ($000s)

Source	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Project Total
PROGRAMMED																		
State - FCR	0	0	0	0	0	0	0	0	0	0	0	55000	0	0	0	0	0	55000
State-Local Prtnrshp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	0	0	0	1728	16655	6035	15914	10103	0	0	0	0	0	50435
State TCI-TP&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	20777	8223	29000	0	0	0	0	0	0	58000
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	1103	0	9315	18418	0	0	0	0	0	28836
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	0	0	6249	42809	21849	0	0	0	0	0	0	70908
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	12513	54280	9595	0	0	0	0	0	0	76388
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	4149	69877	43110	39552	0	0	0	156688
Sub-total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1728**	**57297**	**111347**	**89823**	**153397**	**43110**	**39552**	**0**	**0**	**0**	**496255**
EXISTING																		
State - FCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State-Local Prtnrshp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	118	250	2051	1083	2097	465	0	0	0	0	0	0	0	0	0	6064
State TCI-TP&D	0	0	374	0	0	417	0	841	0	0	0	0	0	0	0	0	0	1632
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	[illegible]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	962	735	1949	1270	0	0	0	0	0	0	0	0	4916
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	670	0	9000	0	0	0	0	0	0	0	0	9670
SFO Ext Fund Transfer	0	0	0	0	0	0	0	1130	0	0	0	0	0	0	0	0	0	1130
Cash BART	206	78	0	57	2052	538	692	656	0	0	0	0	0	0	0	0	0	4278
Property BART	2730	9708	4402	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16840
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	**2936**	**9786**	**4894**	**307**	**4103**		**4194**	**5040**	**10270**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**44530**
TOTAL																		
State - FCR	0	0	0	0	0	0	0	0	0	0	0	55000	0	0	0	0	0	55000
State-Local Prtnrshp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	118	250	2051	1083	2097	2193	16655	6035	15914	10103	0	0	0	0	0	56499
State TCI-TP&D	0	0	374	0	0	417	0	841	0	0	0	0	0	0	0	0	0	1632
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	20777	8223	29000	0	0	0	0	0	0	58000
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	962	735	1949	2373	0	9315	18418	0	0	0	0	0	33752
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans BART Buy-In	0	0	0	0	0	0	670	0	15249	42809	21849	0	0	0	0	0	0	80578
SFO Ext Fund Transfer	0	0	0	0	0	0	0	1130	12513	54280	9595	0	0	0	0	0	0	77518
Cash BART	206	78	0	57	2052	538	692	656	0	0	0	0	0	0	0	0	0	4278
Property BART	2730	9708	4402	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16840
Other	0	0	0	0	0	0	0	0	0	0	4149	69877	43110	39552	0	0	0	156688
COLUMN TOTALS	**2936**	**9786**	**4894**	**307**	**4103**	**3000**	**4194**	**6769**	**67567**	**111347**	**89823**	**153397**	**43110**	**39552**	**0**	**0**	**0**	**540785**

Run date: 26-Sep-92
Version 29-Aa

COLMA EXTENSION (CSX)
CASH FLOW SCHEDULE
($000s)

ALLOCATION PLAN Source	Escl Rate Yr Escl-> Prior	0 FY'87	1 FY'88	0.04 2 FY'89	3 FY'90	4 FY'91	5 FY'92	6 FY'93	7 FY'94	8 FY'95	9 FY'96	10 FY'97	11 FY'98	12 FY'99	13 FY'00	14 FY'01	Prj Tot
UNFUNDED																	
UMTA 3	0	0	0	0	0	0	0	42322	0	0	0	0	0	0	0	0	42322
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI: Art XIX	0	0	0	0	0	0	4255	7586	0	0	0	0	0	0	0	0	11841
State TCI: TP&D	0	0	0	0	0	0	0	1041	1983	0	0	0	0	0	0	0	3024
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	**0**	**0**	**0**	**0**	**0**	**0**	**4255**	**50949**	**1983**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**57187**
FUNDED																	
UMTA 3	0	0	0	0	0	0	11653	70012	0	0	0	0	0	0	0	0	81665
UMTA 9	0	0	0	3647	0	0	0	0	0	0	0	0	0	0	0	0	3647
State TCI: Art XIX	0	0	0	0	1091	2169	0	0	0	0	0	0	0	0	0	0	3260
State TCI: TP&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	17226	0	899	6295	0	0	0	0	0	0	0	0	24420
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	**0**	**0**	**0**	**3647**	**18317**	**2169**	**12552**	**76307**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**112992**
TOTAL																	
UMTA 3	0	0	0	0	0	0	11653	112334	0	0	0	0	0	0	0	0	123987
UMTA 9	0	0	0	3647	0	0	0	0	0	0	0	0	0	0	0	0	3647
State TCI: Art XIX	0	0	0	0	1091	2169	4255	7586	0	0	0	0	0	0	0	0	15101
State TCI: TP&D	0	0	0	0	0	0	0	1041	1983	0	0	0	0	0	0	0	3024
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	17226	0	899	6295	0	0	0	0	0	0	0	0	24420
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLUMN TOTALS	**0**	**0**	**0**	**3647**	**18317**	**2169**	**16807**	**127256**	**1983**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**170179**

EXPENDITURES BY SOURCE

COLMA EXTENSION (CSX) ($000s)

Source	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	Prj Tot
UNFUNDED																	
UMTA 3	0	0	0	0	0	0	0	0	2884	36250	3188	0	0	0	0	0	42322
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI: Art XIX	0	0	0	0	0	0	0	3793	7014	1034	0	0	0	0	0	0	11841
State TCI: TP&D	0	0	0	0	0	0	0	0	0	3024	0	0	0	0	0	0	3024
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3793**	**9898**	**40308**	**3188**	**0**	**0**	**0**	**0**	**0**	**57187**
FUNDED																	
UMTA 3	0	0	0	0	0	0	5603	33980	42082	0	0	0	0	0	0	0	81665
UMTA 9	0	0	0	0	389	2405	853	0	0	0	0	0	0	0	0	0	3647
State TCI: Art XIX	0	0	0	0	49	301	1040	1870	0	0	0	0	0	0	0	0	3260
State TCI: TP&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	49	301	1040	5663	7975	8025	1367	0	0	0	0	0	24420
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	**0**	**0**	**0**	**0**	**486**	**3006**	**8537**	**41514**	**50057**	**8025**	**1367**	**0**	**0**	**0**	**0**	**0**	**112992**
TOTAL																	
UMTA 3	0	0	0	0	0	0	5603	33980	44966	36250	3188	0	0	0	0	0	123987
UMTA 9	0	0	0	0	389	2405	853	0	0	0	0	0	0	0	0	0	3647
State TCI: Art XIX	0	0	0	0	49	301	1040	5663	7014	1034	0	0	0	0	0	0	15101
State TCI: TP&D	0	0	0	0	0	0	0	0	0	3024	0	0	0	0	0	0	3024
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	49	301	1040	5663	7975	8025	1367	0	0	0	0	0	24420
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLUMN TOTALS	**0**	**0**	**0**	**0**	**486**	**3006**	**8537**	**45307**	**59955**	**48333**	**4555**	**0**	**0**	**0**	**0**	**0**	**170179**

Run date: 26-Sep-92
Version 29-Aa

SAN FRANCISCO EXTENSION W/ OUT COLMA
Based on 09/90 STIP Adoption and MTC Resolution #1876.
Escalated

FUND TRANSFER AGREEMENT AMOUNTS

Source	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Project Total
PROGRAMMED																		
UMTA 3	0	0	0	0	0	0	0	22500	75290	120150	186380	77500	77500	77490	0	0	0	636809
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	0	0	0	3970	6276	11932	22575	18131	20098	12566	8729	1857	0	106135
State TCI-TP&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**26470**	**81566**	**132081**	**208955**	**95631**	**97598**	**90056**	**8729**	**1857**	**0**	**742944**
EXISTING																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-TP&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	0	0	0	3970	6276	11932	22575	18131	20098	12566	8729	1857	0	106135
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3970**	**6276**	**11932**	**22575**	**18131**	**20098**	**12566**	**8729**	**1857**	**0**	**106135**
TOTAL																		
UMTA 3	0	0	0	0	0	0	0	22500	75290	120150	186380	77500	77500	77490	0	0	0	636809
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	0	0	0	3970	6276	11932	22575	18131	20098	12566	8729	1857	0	106135
State TCI-TP&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	0	0	0	3970	6276	11932	22575	18131	20098	12566	8729	1857	0	106135
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLUMN TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**30440**	**87842**	**144013**	**231530**	**113763**	**117696**	**102622**	**17458**	**3715**	**0**	**849078**

SAN FRANCISCO EXTENSION W/ OUT COLMA ($000s)

EXPENSES Source	Prior	FY'87	FY'88	FY'89	FY'90	FY'91	FY'92	FY'93	FY'94	FY'95	FY'96	FY'97	FY'98	FY'99	FY'00	FY'01	FY'02	Project Total
PROGRAMMED																		
UMTA 3	0	0	0	0	0	0	0	23821	37656	71589	135452	108788	120588	75397	52374	11144	0	636809
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	0	0	0	3970	6276	11932	22575	18131	20098	12566	8729	1857	0	106135
State TCI-TP&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27791**	**43932**	**83521**	**158027**	**126920**	**140686**	**87963**	**61103**	**13002**	**0**	**742943**
EXISTING																		
UMTA 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-TP&D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 108 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SamTrans Match	0	0	0	0	0	0	0	3970	6276	11932	22575	18131	20098	12566	8729	1857	0	106135
SFO Ext Fund Transfer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3970**	**6276**	**11932**	**22575**	**18131**	**20098**	**12566**	**8729**	**1857**	**0**	**106135**
TOTAL																		
UMTA 3	0	0	0	0	0	0	0	23821	37656	71589	135452	108788	120588	75397	52374	11144	0	636809
UMTA 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
State TCI-Art XIX	0	0	0	0	0	0	0	3970	6276	11932	22575	18131	20098	12566	8729	1857	0	106135
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Prop 116 Rail Bonds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bridge Tolls	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alameda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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Cash BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Property BART	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLUMN TOTALS	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**31761**	**50208**	**95452**	**180602**	**145051**	**160784**	**100529**	**69832**	**14859**	**0**	**849078**

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CAPITAL IMPROVEMENT PROGRAM

JULY 1993 THROUGH JUNE 2003 (FY 94 - FY 03)

BART

October 28, 1993

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CONTEXT OF THE PROGRAM

BART faces enormous challenges as it prepares to enter the 21st Century with this *Capital Improvement Program*. The District is committed to building a multi-billion dollar program of rail system extensions, while at the same time undertaking an unprecedented program of rehabilitating and upgrading the existing system, and improving system accessibility -- all while maintaining and even improving the level of service provided.

AN AGING SYSTEM:

The System Rehabilitation Program

When BART initiated service in 1972, it was state-of-the-art: the most modern, most automated rail transit system in the world. Now, more than two decades later, BART is no longer the same sparkling new system. Although the level of service provided has increased dramatically over these 21 years and the system is operating at its greatest reliability ever, now is the time to undertake a major program of system rehabilitation to ensure that service does not deteriorate in the future.

BART now carries twice as many passengers daily than in its early years, patronage is still growing, and the equipment is aging. This combination puts the BART system at risk if steps are not taken immediately to ensure the system's future reliability. Most of the hardware that comprises the BART rail system will reach the end of its operational lifetime over the next few years unless it is rebuilt. Rehabilitation funding requirements are generated from a planned replacement cycle based on useful life. Examples of the aging of the BART system include:

- the typical BART railcar has accumulated over a million miles of travel;
- the doors on a typical car have cycled more than three million times;
- nearly a billion people have been transported in these vehicles, used the farecard vendors, activated the faregates, and ridden the escalators or walked the stairs;
- many of the electronic and computer systems which heralded a new era of rail transit technology a generation ago are now becoming obsolete, and therefore increasingly difficult and expensive to maintain.

This onset of aging makes it essential for BART to begin rebuilding before it experiences the declining spiral of effects that many older rail transit systems have experienced due to their inability to attend to preventative maintenance and

rehabilitation in a timely manner. This is not glamorous, high-visibility work, and it can be very expensive. But it is essential, and in the long run it is much more cost effective to rehabilitate systems before reaching the point of failure than to try to fix problems after they become obvious. This will also avoid future degradation of service and consequent loss of patronage and fare revenue.

BART must not only maintain its current level of service while undergoing both expansion and rebuilding, but also provide even higher levels of service to meet the needs of a growing market. This *Capital Improvement Program* reflects this need in identifying major rehabilitations for transit vehicles, train controls, stations, communications systems, maintenance facilities and other parts of the BART physical plant.

A GROWING SYSTEM:

Planned Growth and New Services

BART patronage has grown dramatically in the last decade, about 80 percent growth from under 140,000 trips on an average weekday in the early 1980's to a weekday average of over 253,000 daily in 1993. Patronage is expected to continue to grow in the future, and this will require additional facilities and capabilities. While BART invested heavily in increasing its people-carrying capacity over the last ten years, continued growth in patronage will require continued capacity expansion. In order to accommodate growth expected to reach 370,000 trips per day in the next decade, this capital program calls for the addition of up to 150 new rail cars for patronage growth beyond the cars necessary and planned for under the Phase 1 extensions program, increases in the supply of power to operate more and longer trains, and an advanced system of automatic train control to increase the frequency of train service.

Projects are already underway to increase patron automobile and bicycle parking. Other projects will increase the capacity to handle more feeder buses at the stations, along with providing more comfortable amenities for patrons who transfer to and from buses at BART stations. A highly innovative grant-funded demonstration program just getting underway involves a test of electric "station cars" as one more possible means of improving connections at both ends of BART rail trips.

Replacement of worn and unreliable escalators and deteriorating farecard vending equipment, along with other station rehabilitation projects and implementation of better interoperator fare mechanisms, will improve the flow of patrons through the stations, while providing increased customer convenience.

The basic program of capacity enhancement projects, such as those indicated above, is intended to accommodate patronage growth to 370,000 daily trips. The Service Improvement program area also includes an Additional Capacity Enhancement subprogram which would go well beyond this basic program, to accommodate growth to 500,000 daily trips. The Additional Capacity Enhancement subprogram is conceptual and still under development, but it would include additional transit vehicles, additional traction power and reliability upgrades, further improvements to station circulation and access, and further expansion of maintenance shop and storage yard facilities beyond the projects listed separately in this *Capital Improvement Program*. This cost indicated for this item provides a preliminary estimate of what these additional improvements might entail.

BART's capital program also envisions completion of the Phase 1 program of system extensions to Dublin-Pleasanton, West Pittsburg, and Colma by the mid-1990's, to Warm Springs by the end of the decade, and to San Francisco International Airport by the year 2002, at the latest. BART is examining strategies to implement the San Francisco Airport extension on an even more aggressive schedule.

Operation of the extensions, together with a larger fleet running on shorter headways, and possibly with more complex operating plans, will require expansion of vehicle maintenance and storage facilities, increased inventory storage, more tools and equipment, and other operational and support facility improvements. Expanded support facilities to accommodate these needs are newly included in this year's capital plan.

Also introduced in this year's *Capital Improvement Program* is BART's proposed "FastTrack" network of regional commuter rail service. The District remains committed to implementing the long-planned Phase 2 and Phase 3 extensions of BART rail service to Antioch, Livermore, northwestern Contra Costa County, the South Bay, and other corridors. But anticipated funding limitations during the next ten years will almost certainly push their completion beyond that time frame. As a near-term interim solution, a network of commuter rail service using conventional diesel locomotives and standard passenger railcars could be placed into service in these same extension corridors at much lower costs and within two years of funding approval.

SYSTEM ACCESSIBILITY:

Americans With Disabilities Act Compliance

The BART system has been hailed as a model of public transit accessibility for elderly and disabled persons ever since the system began operation. For two decades it was held up as a standard worthy of emulation by other systems. To this day BART remains one of the most accessible rail systems in the world. But the federal Americans With Disabilities Act (ADA), which went into effect for transit operators during fiscal year 1993, has set new and even more comprehensive standards than those currently offered by BART or any other rail transit agency in the world.

The capital program required to bring the existing BART stations into compliance with the ADA (the "Key Station" program of projects) is currently estimated to total approximately $17.2 million. This sum is beyond BART's ability to fund from reserves without seriously impacting other projects critical to operation of the system. Of this amount, $1.4 million in Section 9 funding has been programmed to BART by the Metropolitan Transportation Commission. An additional $800,000 is required to rebuild the station access elevator at the 12th Street Station, and $15 million is necessary to provide ADA-mandated accessible Automatic Fare Collection equipment.

ORGANIZATION OF THE PROGRAM

This *Capital Improvement Program* is organized in two basic dimensions: Program Areas and Project Priorities. Program Areas is the primary organization. There are five major programs into which all of the approximately 250 separately listed projects are organized. Several of the Program Areas have sub-program categories as well.

Program Areas

I. **System Rehabilitation**
    A. Rolling Stock Rehabilitation
    B. Mainline Rehabilitation
    C. Stations Rehabilitation
    D. Controls & Communications Rehabilitation
    E. Shop & Yards Rehabilitation
    F. Work Equipment Replacement
II. **Extensions**
    A. Phase 1 Extensions
    B. Phase 2 & 3 Extensions Planning
    C. Oakland Airport Connector
    D. "FastTrack" Commuter Rail System
    E. Intermodal Stations
III. **Seismic Retrofit**
IV. **Service Improvements**
    A. Current Planned Expansion
    B. Additional Capacity Enhancement
V. **Research, Development & Demonstration**

Track One and Track Two Programs:
Project Priorities

This *Capital Improvement Program* lists all of the projects which the District would implement if funding were available. However, a program of this size is currently beyond the level of funding which can reasonably be assumed to become available over the next ten years. Therefore, in accordance with the approach being taken by the Metropolitan Transportation Commission (MTC) in its development of the 20-year *Regional Transportation Plan*, BART's CIP is divided into two "tracks", into which projects are assigned based on priority. Track One comprises the most essential projects, and sets forth a financial plan for funding those projects. BART's Track One includes all Priority 1 and Priority 2 projects. Track Two includes Priority 3, 4 and 5 projects, for which funding cannot currently be identified in the next ten years. Definitions of the five levels of priority are on page 10.

Definitions of Project Priority Classifications

Each project has been assigned a priority level, ranging from a high of 1 to a low of 5, based on degree of criticality to maintenance of the system, safety, operation of the extensions, and service improvements.

Priority Definitions

Track One

1	Mandated by law or code, safety-critical, District assets jeopardized, system operations and patron service levels will be severely impacted, or essential to ensure operation performance of the extensions lines.
2	System operations and patron service levels will be seriously impacted, safety-sensitive, District assets at risk, operating costs will be severely impacted, or introduction of technological advancements which significantly improve operational performance or result in significant cost efficiencies.

Track Two

3	Operating cost or performance levels will be affected, increased service levels or system improvements will be delayed, District goals will not be achieved.
4	Routine replacement of worn or obsolescent equipment or systems, desirable system improvements, or reduced maintenance costs.
5	Identified need, but no immediate or near-term future cost or service impact.

There is also a time element involved in project priorities. Priorities as identified in this program relate to needs *at this time*. Any rehabilitation, replacement or improvement not implemented according to scheduled need may rise in priority at a later date if deferred implementation increases the risk to operations, safety, or impact on operating costs.

Basic Program and Additional Capacity Enhancement

There is one further organizational strategy used in this plan. The "Basic Program" listing in the Priority Level summary table includes those projects which are designed to accommodate patronage growth to 370,000 daily trips. The Service Improvement program area includes an Additional Capacity Enhancement subprogram in Track Two, which would go well beyond the Basic Program. The Additional Capacity Enhancement subprogram is conceptual and still under development, but it is provides a preliminary estimate of the cost of various system improvements which would be necessary to accommodate growth to 500,000 daily trips.

FUNDING STRATEGY

This *Capital Improvement Program* forecasts a need of $1.1 billion to fund the full range of desirable system rehabilitation projects over the next ten years. Planned service improvement projects would require an additional $433 million. The Warm Springs extension is not fully funded, and BART is seeking funding to complete the planned third station on the Dublin/Pleasanton extension. The Oakland Airport Connector project is unfunded. The proposed "FastTrack" regional commuter rail system would require $200 million to be put in place, and the Seismic Retrofit program would require $180 million to be fully implemented.

In order to implement the Track One program of projects, BART will aggressively seek funding from a variety of external funding sources, and also anticipates that the District will need to generate $300 million in BART funds over the ten year period of this program. For more detail on how Track One would be funded, see the Proposed Funding Strategy table on page 17.

FUNDING STRATEGY BY PROGRAM AREA

I. System Rehabilitation

A and B Car Rehabilitation

Rehabilitation of the over 21-year-old BART system is at the heart of BART's capital program. The largest single component of system rehabilitation is rebuilding the original fleet of A- and B-cars to extend their useful lifetimes. The total cost of the effort is currently estimated to be $475.88 million, including the cost of "float" cars to maintain operating fleet size while A&B cars are out of service. This total also reflects cost escalation over the project implementation period.

To date, $27.8 million has been programmed to this project in the form of FTA Section 3 funds (approximately $10 million), Proposition 108 funds ($15 million), $951,000 in state Transit Capital Improvement (TCI) and $1.4 million in BART funds. BART is currently working with MTC to develop a funding agreement on the use of additional Section 3 funds for this project. To date, MTC has indicated willingness to program approximately $230 million in additional Section 3 Fixed Guideway funds over several years. BART will aggressively seek additional funding from federal flexible ISTEA funds, state TCI and Flexible Congestion Relief (FCR) funds, and other sources. A reasonably realistic expectation for these non-Section 3 sources is assumed to be $75 million over the life of the program. Much of this amount is expected to come from the federal Surface Transportation Program (STP) and/or Congestion Mitigation/Air Quality (CMAQ) Program, but BART also is optimistic that TCI and/or FCR funding may be available for programming in outyear State

Transportation Improvement Programs (STIP). With such outyear commitments, BART could possibly borrow funds in the interim in order to keep the car rehabilitation program moving in a expeditious and efficient manner.

Under even this moderately optimistic grant funding scenario, there will be a significant local contribution which will have to come from BART-generated funds. This BART contribution may be on the order of $144 million. A financial commitment for this project is part of the overall intent to generate $300 million as BART's contribution to the District's overall capital program.

Other System Rehabilitation

Other than rehabilitation of the fleet of A- and B-cars, the BART system rehabilitation program totals approximately $658 million, of which about $251 million is in Priority 1. The cost figures for System Rehabilitation other than cars are cited in 1993 dollars, due to the uncertainty about when individual projects will actually receive funding.

Of the $251 million in Priority 1 System Rehabilitation other than A- and B-car work, BART anticipates receiving $94 million in non-traditional transit funding dedicated to specific projects or types of projects:

Dedicated Funding: Advanced Automatic Train Control (AATC)

BART is pursuing new technologies which promise much greater sophistication in train control, and which will permit significant increases in the train-carrying capacity of the existing trackway. The District is currently investigating technologies using federal research and development funds. The technologies under study are part of recent defense industry advances in locational tracking of vehicles and equipment. In light of the opportunity to translate these developments into commercial non-defense hardware systems, the District has negotiated a joint BART/private sector proposal for federal defense conversion funding for project implementation. These sources are outside the traditional federal transit funding process. Estimated cost is approximately $66 million.

Dedicated Funding: Telecommunications Joint Development

BART is also exploring innovative means to provide radio communications in the extension corridors and simultaneously replace the outdated, under-capacity telecommunications network that serves the existing BART system. The approach is to enter into an arrangement with private industry in which a vendor would provide, in BART right-of-way, the infrastructure necessary to support the telecommunications needs of both BART and the vendor. The vendor would subsequently make use of the shared facilities for its own commercial purposes, compensating the District for such use of BART right-of-way. Estimated cost is about $29 million.

Section 9

BART competes annually for Section 9 funds controlled by MTC. Each year funds are "hard programmed" for the next three years, and more loosely programmed for the outyears. Funding for fiscal years 1993, 1994 and 1995 was programmed in 1992. Over these three years BART will receive approximately $15.7 million in Section 9 grants and bridge toll match. This funding will cover work such as some of the projects required for ADA Key Station compliance, replacement of four escalators at Embarcadero Station, elevator rehabilitation, rail replacement, replacement of some maintenance equipment in the shops, and certain safety improvements.

BART will continue to aggressively seek programming of Section 9 funds for the balance of the System Rehabilitation Program. For purposes of estimation, an annual allocation of $12-$15 million between FY 1996 and FY 2003 would be at the high end of funding probability, assuming authorization levels continue to reflect recent years' funding for the region. Allocations in this range, together with what has been programmed already, would generate approximately $115 million over the ten year period. The remaining funding shortfall would probably have to be covered by BART-generated funds. This scenario would require about $42 million in BART funds just to complete the Priority 1 rehabilitation program.

II. Extensions Program

Dublin/Pleasanton Extension

This extension is considered fully funded for two stations, assuming all programmed funding is realized as currently planned. BART is seeking funding for completion of the third station at West Dublin/Pleasanton, as a candidate for funding through the *Regional Transportation Plan (RTP)* process.

North Concord/West Pittsburg Extension

This extension is considered fully funded for two stations, assuming all programmed funding is realized as currently planned.

Warm Springs Extension

The Warm Springs Extension was estimated to cost $540.8 million in 1990. The current funding package shows a shortfall of approximately $153 million. The cost and financial plan for this project will be updated when a new project implementation schedule is completed. Full funding for this extension will be addressed through MTC's RTP process.

Colma Extension

This extension is considered fully funded, assuming all programmed funding is realized as currently planned.

San Francisco Airport Extension

The $960 million cost of the San Francisco Airport Extension carried in this *Capital Improvement Program* is for the currently defined Locally Preferred Alternative (LPA), which is the basis for the level of federal funding being sought for the project. The LPA includes both the "baseline" project and a "locally funded" component as well. The LPA is considered fully funded at this time, assuming realization of programming as approved in the region and reauthorization of the federal ISTEA program. The project scope will continue to be developed as work on the Environmental Impact Report/Statement (EIR/EIS) and preliminary engineering proceed.

Oakland Airport Connector: *Dedicated Funding*

BART is competing for funding for development and implementation of the Oakland Airport Connector using Suspended Light Rail Transit technology under a special federal funding program for this type of project. Funds have already been secured for a study of the feasibility of this approach. If the FTA selects the District to continue with the project, the next step in the process is completion of an EIR/EIS and preliminary engineering, for which $4 million in additional federal funds are currently being sought. If this grant is approved, BART and the Port of Oakland together will need to provide $1 million in local match. If the results of these studies are positive, BART will seek implementation funding in cooperation with the Port of Oakland.

"FastTrack" Commuter Rail System and Intermodal Stations

BART has proposed this system for regional funding consideration through the RTP process. It is assumed that additional funding would be provided by those jurisdictions which would benefit from these services and which are not part of the BART District.

III. Seismic Retrofit Program

At the time of its construction, BART was built to the most demanding seismic standards of the day. This level of design has served the region extremely well. During the time that the San Francisco-Oakland Bay Bridge and other regional freeway facilities were out of service for repairs following the major earthquake of October 1989, BART continued to operate smoothly and without incident. Indeed, the system carried an extra 100,000 trips a day during this period, increasing patron loads by 40 percent over typical pre-earthquake service.

Seismic design has developed considerably over the last 25 years, however. BART's extensions are being built to these new, more stringent standards. BART has proposed that the entire existing system be brought up to these new standards as well. This would be a major undertaking, with a current cost estimate of $180 million in 1993 dollars. It is the BART District's position that a dedicated funding source should be identified for this proposed program, similar to the state program which is currently retrofitting the highway system for seismic strengthening. There is no other existing funding source capable of handling a program of this magnitude without seriously compromising transit operations in the region. BART intends to carefully review this matter with the California Department of Transportation (Caltrans) and the California Transportation Commission (CTC), as well as the Metropolitan Transportation Commission (MTC).

IV. Service Improvements

BART is proposing several projects designed to improve the level of service offered, the largest of which is the addition of up to 150 new rail vehicles to accommodate patronage growth to 370,000 daily trips. These cars would be in addition to those included in the various Phase 1 extensions. Section 3 funding may be available in the fiscal years 2000 to 2003, after the Section 3 commitment to A and B car rehabilitation is completed. Other funding for this program area could include other federal and state funds, and additional contribution from BART-generated sources.

V. Research, Development & Demonstration Program

BART has embarked on an ambitious program of technology research, development and demonstration extending well beyond AATC. The District has an existing grant to study the feasibility of using ***Superconducting Magnetic Energy Storage (SMES)*** as a means of supplementing traction power in locations where it is technically very difficult and/or too expensive to install additional conventional power supply, such as deep in the Transbay Tube. If the current initial studies prove promising, BART will seek additional funding to further develop and ultimately implement SMES technology.

Another area of technological promise under study is ***Electric Cars***. BART is a member of state and national consortia working to demonstrate the use of electric vehicles as "station cars". The concept is to provide an all-electric, non-polluting transportation system linking public rail transit with the need for personalized trip-making at both the origin (home) and destination (work, shopping, recreation, etc.) ends of the trip. The District has been awarded $1.3 million in demonstration funding from defense conversion sources, the Bay Area Air Quality Management District, PG&E and Caltrans. Additional funding from other sources will be pursued as needs and opportunities arise.

Other areas in which BART is exploring the possibilities of leading edge technological developments and opportunities for R,D&D funding include ***Active Noise Abatement, Artificial Intelligence, Advanced Traveler Information Systems, Security Enhancement,*** *and* ***Automated Test and Monitoring Equipment.*** R,D&D funding is expected to continue to come from non-traditional sources of transit funding, and will therefore not compete with or otherwise compromise the delivery of transit service in the region.

BART Reserves Available for Project Funding

The District currently has approximately $25 million available to use as local match to grants or to fund critical projects entirely with BART funds where no grant funding is anticipated.

Proposed Funding Strategy

BART FY 1994–2003 Capital Improvement Program

	Total Cost	Funding thru FY93	Remaining Funding Req't.	RTP Sources	Section 3	Section 9	Other Fed. & St	Other	BART	Cumul. BART	Notes
I. Track One Program											
A. Fully Funded Activities											
Extensions & Extensions Related											
Dublin/Pleasanton	514.1	514.1	0.0								
No. Concord/W. Pittsburg	505.8	505.8	0.0								
Colma	170.0	170.0	0.0								
San Francisco Airport *	960.2	960.2	0.0								
B. Activities Proposed for Dedicated Funding Sources											
Extensions & Extensions Related											
Warm Springs **	540.8	387.8	153.0	153.0	0.0	0.0	0.0	0.0	0.0	0.0	
Third station on DPX extension	28.0	0.0	28.0	28.0	0.0	0.0	0.0	0.0	0.0	0.0	
Oakland Airport Connector	131.2	1.0	130.2	0.0	0.0	0.0	104.2	13.0	13.0	13.0	1
"FastTrack" Commuter Rail System ***	200.0	0.0	200.0	200.0	0.0	0.0	0.0	0.0	0.0	13.0	2
Core System											
A/B car rehabilitation	475.9	27.8	448.1	0.0	229.0	0.0	75.0	0.0	144.1	157.1	3
Seismic retrofit	180.1	0.0	180.1	0.0	0.0	0.0	180.1	0.0	0.0	157.1	4
Advanced auto. train control	66.3	0.7	65.6	0.0	0.0	0.0	51.5	8.4	5.7	162.8	5
Radio system replacement	29.3	0.4	29.0	0.0	0.0	0.0	0.0	29.0	0.0	162.8	6
C. Activities Proposed for Non–Dedicated Sources											
Core System											
Priority 1 ****	176.3	19.6	156.7	0.0	0.0	115.0	0.0	0.0	41.7	204.5	
Priority 2, excl. seismic	525.1	3.5	521.7	0.0	75.0	0.0	272.8	0.0	173.9	378.4	7
TOTALS (Track 1)	4,503.1	2,590.8	1,912.3	381.0	304.0	115.0	683.6	50.4	378.4	378.4	
II. Track Two Program											
A. Current Planned Expansion	364.3	6.1	358.2								
B. Additional Capacity Expansion	2,000.0	0.0	2,000.0								
TOTALS (Track 2)	2,364.3	6.1	2,358.2								
TOTAL PROGRAM	6,867.4	2,596.9	4,270.5	381.0	304.0	115.0	683.6	50.4	378.4	378.4	

NOTES

**Cost of Locally Preferred Alternative, including "baseline" project and additional locally funded component.*

***Warm Springs cost estimate prepared in 1990; subject to updating when a new schedule is determined.*

****Assumes cost sharing by other beneficiaries of commuter rail program in the region.*

*****Excluding A/B car rehabilitation, advanced auto. train control, and radio system replacement, which are listed separately above.*

1. *Proposes 80% funding with Federal SLRT demonstration funds and 10% local match each from Port of Oakland and BART.*
2. *Includes one–time capital cost and start–up lease costs for track and equipment.*
3. *Proposes a minimum of $75 million from federal flexible and state funds sources, in addition to FTA Sec. 3 and BART funds.*
4. *Proposes that program be funded with a dedicated source, similar to the existing state highway bridge seismic retrofit program.*
5. *Proposes $51.5 million in ARPA defense conversion funding and $8.4 million in vendor financing.*
6. *Proposes 100% funding through vendor financing.*
7. *Some portion of this priority level may need to move to Track 2 depending on funding availability.*

Summary of Funding Needs by Program Area

BART FY1994–2003 Capital Improvement Program

	Project Category	Total Cost*	Funding thru FY93	Funding Req't.*	Fiscal Year Need* 1994	1995	1996	1997	1998	1999–03
I.	**System Rehabilitation**									
A.	Rolling Stock Rehabilitation	480,161	31,572	448,589	237,006	21,500	190,083	0	0	0
B.	Mainline Rehabilitation	189,116	1,687	187,429	7,756	27,115	55,278	20,350	6,707	70,223
C.	Stations Rehabilitation	122,743	4,523	118,220	21,183	55,103	18,600	9,569	4,174	9,591
D.	Controls and Communication Rehabilitation	136,202	4,821	131,381	35,122	33,436	38,003	24,495	175	150
E.	Shops & Yards Rehabilitation	195,938	3,300	192,638	5,800	19,918	18,253	40,007	20,775	87,885
F.	Work Equipment Replacement	28,104	0	28,104	1,200	6,585	4,362	2,846	4,131	8,980
	Subtotal	**1,152,264**	**45,903**	**1,106,361**	**308,067**	**163,657**	**324,579**	**97,267**	**35,962**	**176,829**
II.	**Extensions**									
A.	Phase 1 Extensions	2,718,800	2,537,800	181,000	0	0	28,000	0	0	153,000
B.	Phase 2 & 3 Extensions Planning	3,475	3,475	TBD	TBD	TBD	TBD	TBD	TBD	TBD
C.	Oakland Airport Connector	131,228	1,028	130,200	5,000	0	125,200	0	0	0
D.	FastTrack Commuter Rail System **	200,000	0	200,000	0	100,000	100,000	0	0	0
E.	Intermodal Stations	40,000	0	40,000	0	40,000	0	0	0	0
	Subtotal	**3,093,503**	**2,542,303**	**551,200**	**5,000**	**140,000**	**253,200**	**0**	**0**	**153,000**
III.	**Seismic Retrofit**	**180,143**	**0**	**180,143**	**0**	**6,531**	**20,612**	**17,000**	**17,000**	**119,000**
IV.	**Service Improvements**									
A.	Current Planned Expansion	438,513	5,678	432,835	0	30,337	75,498	306,400	0	20,600
B.	Additional Capacity Enhancement	2,000,000	0	2,000,000	0	0	0	0	0	2,000,000
	Subtotal	**2,438,513**	**5,678**	**2,432,835**	**0**	**30,337**	**75,498**	**306,400**	**0**	**2,020,600**
V.	**Research, Development & Demonstration**	**2,975**	**2,975**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**
	GRAND TOTALS	**6,867,398**	**2,596,859**	**4,270,539**	**313,067**	**340,525**	**673,889**	**420,667**	**52,962**	**2,469,429**

NOTES:

* All figures in thousands of dollars.

* All figures represent the amount of funding required for obligation in the fiscal year indicated.

* All figures in 1993 dollars, except that A&B Car Rehabilitation and the Dublin/Pleasanton, West Pittsburg, Colma and San Francisco Aiport extensions are escalated through their project implementation periods. See additional notes in Extensions table.

**Commuter Rail Program costs based on one–time capital cost and start–up lease cost for equipment and right–of–way.

Summary of Funding Needs by Priority Level

Priority Level	Total Cost	Funding thru FY93	Funding Req't.	Fiscal Year Need 1994	1995	1996	1997	1998	1999–03
Track One									
Priority 1									
Basic Program	747,798	48,459	699,339	302,208	91,875	223,223	30,885	10,921	40,227
Phase I Extensions Program	2,718,800	2,537,800	181,000	0	0	28,000	0	0	153,000
Oakland Airport Connector	131,228	1,028	130,200	5,000	0	125,200	0	0	0
FastTrack Commuter Rail System	200,000	0	200,000	0	100,000	100,000	0	0	0
SUBTOTAL	3,797,826	2,587,287	1,210,539	307,208	191,875	476,423	30,885	10,921	193,227
Priority 2	705,274	3,475	701,799	5,859	43,606	89,449	355,653	24,402	182,830
Track One Subtotal	4,503,100	2,590,762	1,912,338	313,067	235,481	565,872	386,538	35,323	376,057
Track Two									
Priority 3									
Current Planned Expansion	300,785	6,097	294,688	0	89,141	90,935	26,113	16,644	71,855
Additional Capacity Enhancement	2,000,000	0	2,000,000	0	0	0	0	0	2,000,000
SUBTOTAL	2,300,785	6,097	2,294,688	0	89,141	90,935	26,113	16,644	2,071,855
Priority 4	61,841	0	61,841	0	14,484	16,923	7,922	995	21,517
Priority 5	1,672	0	1,672	0	1,419	159	94	0	0
Track Two Subtotal	2,364,298	6,097	2,358,201	0	105,044	108,017	34,129	17,639	2,093,372
Totals	6,867,398	2,596,859	4,270,539	313,067	340,525	673,889	420,667	52,962	2,469,429

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I–A. Rolling Stock Rehabilitation

	Total Cost	Funding thru FY93	Funding Req't.	Fiscal Year Need					
Priority 1				1994	1995	1996	1997	1998	1999–03
A&B car rehabilitation									
Minimum quantity (200–225 cars)	264,300	27,784	236,516	236,516					
Additional quantities (215–240 cars)	190,083	0	190,083			190,083			
* Float vehicles (5 years of 36 vehicles)	21,500	0	21,500		21,500				
Subtotal	**475,883**	**27,784**	**448,099**	**236,516**	**21,500**	**190,083**	**0**	**0**	**0**
Accelerated project activities incl. in listing above									
A&B car truck program	*9,966*	*0*	*9,966*	*3,322*	*3,322*	*3,322*			
Replace A&B car batteries	*1,584*	*0*	*1,584*	*1,584*					
Replace doors on A&B cars	**4,278**	**3,788**	**490**	**490**					
Category Total	**480,161**	**31,572**	**448,589**	**237,006**	**21,500**	**190,083**	**0**	**0**	**0**

** Vehicles to be used initially as replacements for cars out of service for rehabilitation. The permanent use of these cars is expected to be for operation of the San Francisco Airport extension, the cost of which, including cars, is shown in the Extensions Program listings.*

I–B. Mainline Rehabilitation

	Total Cost	Funding thru FY93	Funding Req't.	Fiscal Year Need					
				1994	1995	1996	1997	1998	1999–03
Priority 1									
Replace running rail & accessories	18,961	0	18,961	3,826		5,045		5,045	5,045
Renew curve rail analysis equipment	815	0	815	815					
Rehabilitate subway ventilation fans	1,687	1,687	0						
Recoat steel tunnel liner rings	776	0	776	476			150		150
Repaint structural girders for corrosion protection	426	0	426	186			75		165
Replace sump pumps in subway tunnels	2,000	0	2,000	2,000					
Subtotal	24,665	1,687	22,978	7,303	0	5,045	225	5,045	5,360
Priority 2									
Replace R–O–W fencing and barbed wire	592	0	592	53	53	84	84	127	191
Repair Lake Merritt Channel subway structure	1,500	0	1,500	300	1,200				
Replace traction power house roofs	250	0	250	50	100	100			
Rehab insulation in transformer rectifiers	1,050	0	1,050	50	250	250	250	250	
Reinforce coverboard mountings	177	0	177		177				
Replace 1 KV flex jumpers	510	0	510		510				
Replace surfaces at maintenance set–on points	596	0	596		149	149	149		149
Replace asbestos–containing arc chutes	540	0	540		540				
Widen I–80 undercrossing in Richmond	350	0	350		350				
Remove obstructions on emergency walkways	300	0	300		300				
TBT vents automatic power transfer	2,200	0	2,200		200	2,000			
TBT fan and damper control improvements	350	0	350		350				
Replace TBT lower gallery lighting fixtures	150	0	150		150				
Additional blue light safety stations	130	0	130		130				
Hazmat containment around power transformers	800	0	800		800				
Remove gaps in handrail along emergency walkways	230	0	230		230				
Replace BHT fan controller	200	0	200		200				
Asbestos abatement (moderate and low priority)	4,893	0	4,893		422	4,471			
F–line traction power	14,840	0	14,840			1,800			13,040
M–line traction power	36,500	0	36,500			8,200			28,300
C–line traction power	5,120	0	5,120			5,000			120
R–line traction power	18,500	0	18,500			14,100			4,400
Subtotal	89,778	0	89,778	453	6,111	36,154	483	377	46,200

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Shading indicates programmed grant funding.

I–B. Mainline Rehabilitation (continued)

	Total Cost	Funding thru FY93	Funding Req't.	Fiscal Year Need					
				1994	1995	1996	1997	1998	1999–03
Priority 3									
Replace traction substation grounding devices	1,050	0	1,050		1,050				
Repair structure damage in S.F. approach tunnel	800	0	800		800				
Retrofill traction pwr. transformer dielectric liquid	1,836	0	1,836		258	258	258	258	804
Replace contact rail (worn segments systemwide)	10,050	0	10,050		50				10,000
Replace contact rail (entire M–line)	17,300	0	17,300		17,300				
Repair or replace cable pipe at M–80	1,525	0	1,525				50		1,475
Replace C–line 34.5 KV cable	15,495	0	15,495		495	5,000	5,000		5,000
Repair or replace rectifiers and buss work	13,350	0	13,350		167	167	13,016		
Repaint steel bridges for corrosion protection	1,750	0	1,750		735	400	400	215	
Additional electrical insulation at various locations	140	0	140			140			
Motorize fire main valves in BHT	200	0	200			200			
Sound mitigation program	2,000	0	2,000			500	500	500	500
Replace traction power control batteries	175	0	175		35	35	35	35	35
Subtotal	**65,671**	**0**	**65,671**	**0**	**20,890**	**6,700**	**19,259**	**1,008**	**17,814**
Priority 4									
Replace reclosers, potentials, transfer trip controls	1,136	0	1,136		14	249	277	277	319
Replace 1 KV disconnect switch enclosures	100	0	100		100				
Replace grounding diode switch contactors	636	0	636				106		530
Dry standpipes at I–680 and Springbrook crossings	295	0	295			295			
Tunnel hose valve plan	135	0	135			135			
Relocate crossover at C53	6,700	0	6,700			6,700			
Subtotal	**9,002**	**0**	**9,002**	**0**	**114**	**7,379**	**383**	**277**	**849**
Category Total	189,116	1,687	187,429	7,756	27,115	55,278	20,350	6,707	70,223

Shading indicates programmed grant funding.

I–C. Stations Rehabilitation

	Total Cost	Funding thru FY93	Funding Req't.	Fiscal Year Need					
				1994	1995	1996	1997	1998	1999–03
Priority 1									
Station security program	3,000	0	3,000		1,000	1,000	1,000		
Replace four Embarcadero Station escalators	2,687	2,687	0						
Rehabilitate station elevator valves & sills	510	510	0						
Repair concrete roof of Lake Merritt Station	356	0	356	356					
Repair platform sub–surface at six stations	387	0	387	387					
Replace raised and damaged concrete walks at sta.	730	0	730		132	75	93	51	379
Replace station signage	995	0	995		925		10	10	50
Rehabilitate station security gates	1,000	0	1,000	500	500				
Anti–skid groove–and–fill on station stairs	276	0	276	276					
Key Station (ADA)/accessibility improvements	2,647	907	1,740	1,740					
Accessible AFC equipment– – –ADA compliance	15,000	0	15,000	15,000					
Replace Auto. Fare Coll. equip. (see also ADA AFC proj. above) *	40,000	0	40,000		39,400	300	300		
Add'l. faregates at 12th, Embarc., Pl. Hill, El Cerrito	425	0	425	425					
Subtotal	**68,013**	**4,104**	**63,909**	**18,684**	**41,957**	**1,375**	**1,403**	**61**	**429**
Priority 2									
Replace AFC air dryers	250	0	250		125	125			
Replace/modify change machines	1,594	0	1,594	1,594					
Replace platform edge tile	3,865	0	3,865	205	1,360	2,300			
Replace station security gates	1,751	0	1,751	700	277	774			
Replace/rehab escalators and elevators systemwide	9,500	0	9,500		3,170	3,170	3,160		
Install escalator step side plates	700	0	700		100	100	100	100	300
Refurbish stair/escalator walk–off mats	1,200	0	1,200		300	150	150	150	450
Replace roofing at 15 stations	1,968	0	1,968		277	77	430	360	824
Replace ceiling in No. Berkeley Station	873	0	873			873			
Replace lentel structures on W. Oakland platforms	1,500	0	1,500		300	1,200			
Replace station agents' consoles systemwide	1,600	0	1,600			1,600			
Refurbish restrooms at all stations	840	0	840		185	90	115	100	350
Upgrade station emergency lighting	3,224	0	3,224		300	2,924			
Replace fire mains in three stations	250	0	250		250				
Station stairway detection warning (E&H)	56	0	56		56				
Replace four stations fire alarm systems (downtown SF)	350	0	350		350				
Replace all primary station agents' booths	5,100	0	5,100		1,200	600	600	600	2,100
Restore damaged/missing wall tile	440	0	440		300	140			
Refurbish station lighting fixtures	3,525	0	3,525		1,200	575	475	650	625
Repair and repaint all painted surfaces	2,900	0	2,900		470	230	290	350	1,560
Resurface parking lots at stations as needed	1,537	0	1,537		459	215	228	251	384
Restore worn floor tile and brick	1,600	0	1,600		320	160	160	160	800
Restore platform canopies and windscreens	400	0	400		240	160			
Replace AC and Muni transfer machines	240	0	240		240				
Subtotal	**45,263**	**0**	**45,263**	**2,499**	**11,479**	**15,463**	**5,708**	**2,721**	**7,393**

**Does not include portion funded in extensions budgets.*

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Shading indicates programmed grant funding.

I–C. Stations Rehabilitation (continued)

	Total Cost	Funding thru FY93	Funding Req't.	Fiscal Year Need 1994	1995	1996	1997	1998	1999–03
Priority 3									
Replace P.A. systems at all stations	680	0	680				680		
Replace station bike lockers	419	419	0						
Replace lighting systems in downtown S.F. stations	200	0	200			200			
Replace locks at all stations	280	0	280		30	30	60	60	100
Reconfigure restrooms at three S.F. stations	370	0	370		61	309			
Replace station parking lot signs	240	0	240		30	30	30	30	120
Modify parking lot drainage at Bayfair Station	30	0	30		30				
Refurbish staff breakrooms at all stations	157	0	157		16	18	17	17	89
Build staff breakrooms at eight stations	375	0	375		200	70	105		
Refurbish irrigation systems at all landscaped sta.	2,600	0	2,600		600	400	400	400	800
Refurbish landscape and hardscape at stations	1,185	0	1,185		270	175	175	125	440
Refurbish/replace pigeon netting	500	0	500		80	80	60	60	220
Subtotal	**7,036**	**419**	**6,617**	**0**	**1,317**	**1,312**	**1,527**	**692**	**1,769**
Priority 4									
Replace sewage pumps in underground stations	381	0	381				381		
Replace station parking lot lighting fixtures	2,050	0	2,050		350	450	550	700	
Subtotal	**2,431**	**0**	**2,431**	**0**	**350**	**450**	**931**	**700**	**0**
Category Total	**122,743**	**4,523**	**118,220**	**21,183**	**55,103**	**18,600**	**9,569**	**4,174**	**9,591**

Shading indicates programmed grant funding.

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I–D. Controls & Communications Rehabilitation

	Total	Funding	Funding	Fiscal Year Need					
Priority 1	Cost	thru FY93	Req't.	1994	1995	1996	1997	1998	1999–03
Next generation control system essential *	14,084	4,471	9,613	2,556	3,837	3,220			
Replace radio network *	29,300	350	28,950	21,459	7,491				
Advanced automatic train control (implementation phase)**	65,600	0	65,600	8,700	13,200	20,500	23,200		
Replace Tektronix consoles in Central	1,240	0	1,240	200	400	320	320		
Replace Maint. Vehicle Detection Devices	1,500	0	1,500	100	1,400				
Subtotal	**111,724**	**4,821**	**106,903**	**33,015**	**26,328**	**24,040**	**23,520**	**0**	**0**
Priority 2									
Portable radios for station agents	115	0	115			115			
Next generation control (destination sign replacement)	5,587	0	5,587	2,107	2,107	1,373			
Replace Digital Transmission System	3,200	0	3,200		1,200	1,200	800		
Replace tower console IC, radio switch matrix & PA systems	30	0	30		30				
Replace yard cable plant	400	0	400		100	100	100	100	
Replace cable plant (excl. T1) systemwide	250	0	250		25	25	25	25	150
Replace wayside cable plant splice boxes syswide	100	0	100		100				
Replace maintenance phone system	150	0	150		150				
Yard tower data network	600	0	600		600				
Replace MARIS (MIS) software	640	0	640		640				
Replace MIS mainframe computer	3,000	0	3,000			3,000			
Subtotal	**14,072**	**0**	**14,072**	**2,107**	**4,952**	**5,813**	**925**	**125**	**150**
Priority 3									
Replace yard voice recorders	200	0	200		100	100			
Replace CATV and CCTV systemwide	200	0	200		50	50	50	50	
Subtotal	**400**	**0**	**400**	**0**	**150**	**150**	**50**	**50**	**0**
Priority 4									
Replace SORS systemwide	2,006	0	2,006		2,006				
Replace T1 cable systemwide	8,000	0	8,000			8,000			
Subtotal	**10,006**	**0**	**10,006**	**0**	**2,006**	**8,000**	**0**	**0**	**0**
Category Total	136,202	4,821	131,381	35,122	33,438	38,003	24,495	175	150

** Does not include portions funded in extensions budgets.*

*** Preliminary estimate––actual cost to be determinined thru competitive negotiation: if AATC is not implemented, then conventional resignaling needed on A–line.*

I–E. Shops & Yards Rehabilitation

	Total Cost	Funding thru FY93	Funding Req't.	Fiscal Year Need 1994	1995	1996	1997	1998	1999–03
Priority 1									
Non–stock inventory (repairable parts provisioning)	48,530	0	48,530	1,500	1,900	2,280	5,237	5,285	32,328
Replace Hayward truing machine	1,500	0	1,500	1,500					
New wheel truing machine	2,500	0	2,500	2,500					
Replace Hayward wheel press	500	500	0						
Hayward Shop rehab/equip. replacement	1,900	1,900	0						
Replace dust collector systems at Richmond & Concord	900	900	0						
Replace parts washing facilities in all shops	300	0	300	300					
Replace rail and turnouts in East Bay yards	3,730	0	3,730		190	400	500	530	2,110
Subtotal	**59,860**	**3,300**	**56,560**	**5,800**	**2,090**	**2,680**	**5,737**	**5,815**	**34,438**
Priority 2									
Add office space at Concord Stores	20	0	20		20				
Resurface truck bay and storage area at Hayward Shop	43	0	43			43			
Recondition overhead cranes (Hay, Rich, Conc, DC)	1,000	0	1,000			300	400		300
Replace roofing on shops, towers, etc.	3,316	0	3,316		426	783		560	1,547
Expand Hayward Shop	5,416	0	5,416				5,416		
Expand Hayward Yard	6,251	0	6,251				6,251		
Expand Concord Shop	4,250	0	4,250				4,250		
Expand Concord Yard	4,292	0	4,292				4,292		
Expand Richmond Shop	2,211	0	2,211				2,211		
Expand Richmond Yard	6,038	0	6,038				6,038		
Improve Daly City Yard & Shop	183	0	183				183		
Central receiving/distribution warehouse facility	6,350	0	6,350			6,350			
Install storage areas sprinker systems	310	0	310		310				
Replace purchasing & inventory control system	530	0	530		530				
Subtotal	**40,210**	**0**	**40,210**	**0**	**1,286**	**7,476**	**29,041**	**560**	**1,847**
Priority 3									
Replace transit vehicle washers (Rich, Conc, Hay)	4,500	0	4,500		1,650	2,850			
Recondition shop sump pumps (Rich, Conc, Oak)	213	0	213		213				
Second wheel/axle press (location TBD)	1,400	0	1,400		1,400				
Rehab and reconfigure Oakland Shop	75,000	0	75,000			4,000	5,000	14,400	51,600
Additional tracks at Hayward Yard	86	0	86		86				
Subtotal	**81,199**	**0**	**81,199**	**0**	**3,349**	**6,850**	**5,000**	**14,400**	**51,600**

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Shading indicates programmed grant funding. ▨

I–E. Shops & Yards Rehabilitation (continued)

	Total	Funding	Funding	Fiscal Year Need					
Priority 4	Cost	thru FY93	Req't.	1994	1995	1996	1997	1998	1999–03
Corrosion protection isolation of East Bay yard traction power	2,760	0	2,760		2,760				
Replace shop roll–up doors (Rich, Hay, Conc, Oak)	1,038	0	1,038		750	288			
Replace shop radiant heaters	173	0	173		173				
Pave storage area at Hayward Shop (south & north ends)	90	0	90		90				
Pave storage area at Richmond Shop (south end)	18	0	18		18				
Resurface roads/parking and relamp shop/yard exterior lights	250	0	250		250				
Reconfigure/replace grease/oil facilities (Hay, Rich, Conc, DC)	124	0	124		124				
Repaint shop floors	470	0	470		470				
Replace yard disconnect enclosures	510	0	510		110	200	200		
Replace heating/cooling systems at East Bay shops	2,050	0	2,050		2,050				
Replace heating/cooling system at Lake Merritt Admin.	4,150	0	4,150		4,150				
Replace heating/cooling system at Cash Hdlg. Bldg.	450	0	450		450				
Build second floor & car clean bldg. at Richmond	1,200	0	1,200		600	600			
Subtotal	**13,283**	**0**	**13,283**	**0**	**11,995**	**1,088**	**200**	**0**	**0**
Priority 5									
Paint and repair booth	1,000	0	1,000		1,000				
Recondition restrooms and locker rooms all shops	114	0	114		57	57			
Storage area canopy, lighting and office at Richmond Shop	141	0	141		141				
Rehab all shop offices	131	0	131			102	29		
Subtotal	**1,386**	**0**	**1,386**	**0**	**1,198**	**159**	**29**	**0**	**0**
Category Total	**195,938**	**3,300**	**192,638**	**5,800**	**19,918**	**18,253**	**40,007**	**20,775**	**87,885**

I-F. Work Equipment Replacement

	Total Cost	Funding thru FY93	Funding Req't.	Fiscal Year Need 1994	1995	1996	1997	1998	1999-03
Priority 1									
Replace gasoline-powered maintenance equipment	400	0	400	400					
Priority 2									
Enclosure of flat bed Treasury carts	94	0	94		94				
Barcode system for cash handling	600	0	600	600					
Satellite cash carts	25	0	25		25				
Office computers, LANs, WANs	2,450	0	2,450	50	250	200	200	250	1,500
Install Positron test rack	50	0	50	50					
Replace tolltest workstation	50	0	50		50				
Replace CC&R tools and test equipment	1,000	0	1,000	100	100	200	200	200	200
Replace RS&S tools and test equipment	475	0	475		25	50	175	25	200
Replace P&W tools and test equipment	1,600	0	1,600		400	100	100	100	900
Replace two forklifts	100	0	100		50				50
Replace police cars	1,188	0	1,188		286	176	154		572
Replace vans	1,420	0	1,420		297	83	165	264	611
Replace pick-ups	2,525	0	2,525		250	325	425	275	1,250
Replace armored tractor-trailer truck	615	0	615			123			492
Replace hi-rail crew trucks	1,375	0	1,375			375	250	250	500
Replace hi-rail dump truck (track & structures)	240	0	240		240				
Replace hi-rail fire trucks	700	0	700				350	350	
Replace hi-rail rerailing crane	450	0	450			450			
Replace hi-rail yard switchers	720	0	720		360				360
Replace hi-rail wrecker	225	0	225			225			
Replace hi-rail multi-crane	300	0	300		300				
Replace boom truck (stinger)	85	0	85		85				
Replace hi-rail speed swing	199	0	199				199		
Replace backhoe/tractor	51	0	51			51			
Replace hi-rail vacuum truck	200	0	200						200
Replace dump truck (grounds)	47	0	47						47
Replace double bucket truck	80	0	80						80
Replace hi-rail under-bridge truck	450	0	450			450			
Replace flat-bed truck	48	0	48			48			
Replace lube truck	105	0	105					105	
Replace hi-rail welding trucks	405	0	405		135		270		
Replace trailer-mounted 635 KW generator	70	0	70						70
Replace portable pumps	16	0	16				8		8
Retrofit locomotives	600	0	600		300	300			
Replace rail grinder	1,200	0	1,200						1,200
Replace tamper liner	600	0	600			600			
Replace ballast regulator	175	0	175			175			
Replace geometry car	1,800	0	1,800					1,800	
Subtotal	22,333	0	22,333	800	3,247	3,931	2,496	3,619	8,240

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I–F. Work Equipment Replacement (continued)

	Total Cost	Funding thru FY93	Funding Req't.	Fiscal Year Need					
				1994	1995	1996	1997	1998	1999–03
Priority 3									
Replace forklift/cart	10	0	10		5				5
Replace electric maintenance carts and chargers (shops & TBT)	520	0	520		270			250	
Replace automotive lifts at all shops	367	0	367		304	63			
Replace air compressors at all shops	418	0	418		341		77		
Replace lathes and mills at Hayward and Oakland	202	0	202		202				
Replace machine shop equip. (Conc, Hay, Rich, DC)	50	0	50						50
Portable 3MW traction power substation	1,583	0	1,583		1,583				
Replace sedans	1,120	0	1,120		140	168	182	98	532
Replace forklift	60	0	60		60				
Replace trailer–mounted welder	30	0	30					15	15
Replace trailer–mounted compressor	70	0	70						70
Replace trailer–mounted 50 KW generator	40	0	40					40	
Replace portable 3 KW generators	12	0	12				2	10	
Replace heavy–duty trailer	57	0	57					57	
Replace light–duty trailer	24	0	24					24	
Equipment for technical training labs	403	0	403		193	194	16		
Subtotal	**4,966**	**0**	**4,966**	**0**	**3,098**	**425**	**277**	**494**	**672**
Priority 4									
Replace trailer–mounted chipper	18	0	18					18	
Replace bobcat small tractor	35	0	35						35
Replace steam cleaners (Hay, Conc, Rich, DC)	66	0	66		19	6	8		33
Subtotal	**119**	**0**	**119**	**0**	**19**	**6**	**8**	**18**	**68**
Priority 5									
Replace trash compactors	**286**	**0**	**286**		**221**		**65**		
Category Total	**28,104**	**0**	**28,104**	**1,200**	**6,585**	**4,362**	**2,846**	**4,131**	**8,980**

II. Extensions

	Total Cost	Funding thru FY93	Funding Req't.	Fiscal Year Need 1994	1995	1996	1997	1998	1999–03
Priority 1									
Dublin/Pleasanton	514,050	514,050	0						
Third station on Dublin/Pleasanton line	28,000	0	28,000			28,000			
North Concord/West Pittsburg	505,750	505,750	0						
Warm Springs *	540,800	387,800	153,000						153,000
Colma	170,000	170,000	0						
San Francisco Airport **	960,200	960,200	0						
Oakland Airport Connector ***	131,228	1,028	130,200	5,000		125,200			
"FastTrack" commuter rail system ****	200,000	0	200,000		100,000	100,000			
Subtotal	**3,050,028**	**2,538,828**	**511,200**	**5,000**	**100,000**	**253,200**	**0**	**0**	**153,000**
Priority 2									
Other non–Phase 1 extension planning	3,475	3,475	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Pittsburg–Antioch									
West Contra Costa									
Livermore									
San Francisco									
San Ramon Valley Corridor									
Santa Clara County									
Subtotal	**3,475**	**3,475**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**
Priority 3									
Intermodal stations	40,000	0	40,000		40,000				
Category Total	3,093,503	2,542,303	551,200	5,000	140,000	253,200	0	0	153,000

**Warm Springs cost estimate prepared in 1990; subject to updating when a new project schedule is determined.*

***SFO $960.2 million assumes funding within ISTEA authorization for current Locally Preferred Alternative (LPA), which includes both the "baseline" project and a "locally funded" component as well.*

****BART and Port of Oakland would each contribute $500,000 local match if the project is selected by FTA for SLRT PE/EIS funding, and both agencies would also contribute to the local match for construction if approved by FTA for implementation.*

*****Commuter Rail Program costs based on one–time capital cost and start–up lease cost of equipment and right–of–way.*

III. Seismic Retrofit Program

	Total Cost	Funding thru FY93	Funding Req't.	Fiscal Year Need					
Priority 2				1994	1995	1996	1997	1998	1999–03
Seismic rack anchors & vehicle support tiedowns	356	0	356		356				
Seismic restraints on overhead cranes	179	0	179		179				
Engine–generators for earthquake standby power #1	3,850	0	3,850		2,050	1,800			
Engine–generators for eqrthquake standby power #2	1,855	0	1,855		185	1,670			
Seismic structural evaluation of aerial structures	1,010	0	1,010		1,010				
Seismic retrofit of aerial structures	170,000	0	170,000			17,000	17,000	17,000	119,000
Seismic sensing system upgrade	2,201	0	2,201		2,201				
Gas valve automatic seismic shut–offs	142	0	142			142			
Retrofit Transbay Tube seismic joints	550	0	550		550				
Category Total	180,143	0	180,143	0	6,531	20,612	17,000	17,000	119,000

IV. Service Improvements

	Total Cost	Funding thru FY93	Funding Req't.	Fiscal Year Need 1994	1995	1996	1997	1998	1999–03
Priority 2									
New transit vehicles (up to 150) for patronage growth *	300,000	0	300,000				300,000		
Station parking at West Oakland Station	10,000	0	10,000		10,000				
Subtotal	**310,000**	**0**	**310,000**	**0**	**10,000**	**0**	**300,000**	**0**	**0**
Priority 3									
Additional Capacity Enhancement Program **	2,000,000	0	2,000,000						2,000,000
Add new bike lockers	178	▨ 178	0						
Station parking in City of El Cerrito	5,500	▨ 5,500	0						
Union City parking and transit center	12,675	0	12,675		10,005	2,670			
Fruitvale parking and transit center	14,977	0	14,977		10,332	4,645			
Rockridge parking	7,754	0	7,754			7,754			
Alameda park and ride	429	0	429			429			
New administrative headquarters building	60,000	0	60,000			60,000			
Subtotal	**2,101,513**	**5,678**	**2,095,835**	**0**	**20,337**	**75,498**	**0**	**0**	**2,000,000**
Priority 4									
Station entrance canopies	**27,000**	**0**	**27,000**				**6,400**		**20,600**
Category Total	**2,438,513**	**5,678**	**2,432,835**	**0**	**30,337**	**75,498**	**306,400**	**0**	**2,020,600**

** Does not include vehicles required to operate the extensions, which are included in each extension project budget as listed in the Extensions Program.*

*** Includes additional revenue vehicles; additional traction power and train control rehabilitation and upgrades; other reliability improvements; improved station circulation and access; and further expansion of maintenance shop and storage yard facilities, in order to support an increase in daily patronage from approximately 370,000 under the currently projected growth plan, to 500,000 under an "Expanded Capacity Enhancement" program.*

Shading indicates programmed grant funding.

V. Research, Development and Demonstration

	Total Cost	Funding thru FY93	Funding Req't.	Fiscal Year Need					
				1994	1995	1996	1997	1998	1999–03
Priority 1									
Advanced Automatic Train Control (research component)	700	700	0						
Superconducting Magnetic Energy Storage	350	350	TBD*	130*					
Electric Station Cars	1,300	1,300	TBD						
Joint Development Entrepreneurial Study	250	250	0						
Automatic Transit Scheduler	375	375	0						
Other	TBD	0	TBD						
Category Total	2,975	2,975	TBD	TBD	TBD	TBD	TBD	TBD	TBD

Shading indicates grant funding.

*** $130,000 in ARPA funding being sought for BART R&D in FY94. Additional funding may be sought pending results of early R&D work.***

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Project Descriptions:

I. SYSTEM REHABILITATION

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SYSTEM REHABILITATION PROGRAM

The projects and costs associated with the BART System Rehabilitation Program are generated from replacement cycles based on the useful life of the various components of the physical plant.

A. ROLLING STOCK REHABILITATION

A&B Car Rehabilitation

The rehabilitation of the District's original fleet of A and B Cars is essential to enable the District to continue to provide for current and future service demand levels. The District has one of the oldest average fleet ages in the transit industry. The A and B Cars will be 25 years old prior to rehabilitation and have never been overhauled. The rehabilitation will replace worn out and obsolete components and return the vehicles to their original design specifications. Systems to be replaced or rebuilt include electrical, suspension, braking, coupling, heating and cooling, upholstery and carpeting, and noise reduction. The rehabilitation is intended to add twenty years of service life to the cars and improve their reliability. The cost of remanufacturing vehicles is estimated at approximately 50 percent of new car cost.

There are two activities currently programmed to be part of the overall A&B car rehabilitation project which may need to be accelerated as early stand-alone projects. These are overhaul of the trucks and replacement of the vehicle batteries. The truck project would involve replacement of worn rubber components and wiring. At over 20 years of age, these subsystems are at the ends of their lives in terms of producing a quality ride and acceptable noise levels for passengers. The vehicles batteries are likewise at the end of their useful lives. Failed batteries make it far more difficult to remove trains from service when they experience invertor failure. Delays in removal of inoperative trains results in serious backed-up service disruptions.

Replacement of A&B Car Door Components

Malfunctions of the doors on A&B cars has grown to be a major factor in service disruptions. One early identified problem was expansion of the foam comprising the door core, which then delaminated the door structures and caused jams. A federal grant has been secured to replace the doors and thresholds. More recently it has become apparent the door suspension rails are also contributing to door failures. The rails are becoming corroded, adding to the door jam problem. Additional funding is needed to supplement the grant funds in order to address the door jam problem systematically.

B. MAINLINE REHABILITATION

The purpose of this program of projects is to replace and rehabilitate those components and subsystems of BART's mainline which have deteriorated, or will in the next decade, due to age and use. Many components of the trackway and traction power systems are over 20 years old, are failing with increased frequency and must be replaced. Mainline rehabilitation will prevent rail and traction power failures which would cause disruption and delays to revenue service. The highest priority Mainline Rehabilitation projects include:

Replace Running Rail and Accessories

This project will replace curve-worn rail and switch components in high density train traffic areas. Due to the rail wear caused by the wheel-rail interface, rail and switch components in high usage areas require changeout on a three to five year cycle.

Renew Curve Rail Analysis Equipment

This project will install curve rail wear analysis equipment on the District geometry car. This is necessary to provide better diagnostics and higher precision measurements to determine rail wear to forecast rail renewal requirements and to ensure the safety and comfort of passengers.

Rehabilitate Subway Ventilation Line Fans

This program will replace all ventilation fan blades in tunnels and subways throughout the system. This work is required to upgrade the ventilation fans that are used for emergency evacuation and for maintenance crews performing maintenance. In the past, failures of fans have been experienced due to cracks that developed in the blades, causing the blades to fail. An engineering analysis was made of all ventilation fans throughout the system and it was found that the blades require replacement.

Recoat Tunnel Liner Rings and Repaint Structural Girders for Corrosion Protection

The steel rings that line BART tunnels must periodically be recoated, and structural girders repainted, in order to avoid corrosion and consequent structural deterioration and weakness. This is essential to keep the system safe and reliable.

Replace Sump Pumps in Subway Tunnels

The sump pumps which keep BART subway tunnels dry are over 20 years old and becoming unreliable and expensive to maintain. The ability to pump water out of tunnels is critical to keep the system safe and reliable.

Mainline Rehabilitation also includes the following representative projects:

- Increase traction power for more train service by adding larger power cabling, low-resistance contact rail and additional substation capacity.
- Replacement of fencing along the right-of-way.
- Repair of damaged portions of subway tunnel under the Lake Merritt Channel.

- Replacement of contact rail (third rail for traction power).
- Replacement or rehabilitation of traction power transformers, circuit breakers, grounding devices, and other components.
- Rehabilitation of traction power substations.
- Renovation and replacement of traction rectifier sets.

C. STATIONS REHABILITATION

The purpose of this program of projects is to improve the customer experience in stations by rehabilitating or replacing equipment that is worn, unreliable, obsolete, or no longer economical to clean or repair. The highest priority Stations Rehabilitation projects include:

Station Security Program

BART is currently experimenting with a variety of approaches to increasing patron security in and around BART stations, including closed circuit television, lighting enhancements, additional fencing, and help callboxes. Successful applications, based on an assessment of the cost effectiveness of the demonstrations, will be implemented at additional stations.

Replace Four Embarcadero Station Escalators

This project will replace four modular escalator platform units at the Embarcadero Station. These escalators have high failure rates and are costly to repair in both time and material due to their special design. These high usage units have had very high failure rates over the past three years, and are highly unreliable and difficult to maintain. When a platform unit is out of service, it creates a potential safety concern due to crowding on the platform.

Rehabilitate Station Elevator Valves and Sills

This project will rehabilitate station elevators which have been in service for over 20 years. This project is necessary to make the elevators more reliable and safe. Due to the age of the elevators, trouble calls are increasing and equipment is out of service for longer intervals causing inconvenience to passengers.

Repair Concrete Roof of Lake Merritt Station

This project will repair the structurally deteriorated concrete roof and replace waterproofing over a portion of the mezzanine level of the Lake Merritt Station under Oak Street. The damaged concrete roof has caused water leakage in the south stairway area making it necessary to close that stairway whenever it rains. The water intrusion will also corrode the reinforcing steel in the concrete roof causing further structural deterioration. Implementation of this repair work will restore the structural integrity of the concrete roof and provide safe and uninterrupted patron access between mezzanine and platform levels.

Repair Platform Sub-Surfaces at Six Stations

Platform edge sub-surfaces are deteriorating at West Oakland, San Leandro, Bayfair, Pleasant Hill, Walnut Creek, and Lafayette stations, causing the edge tiles to begin to lift and create a tripping hazard for patrons. Repairs are required constantly and are very labor intensive. Funding is required to reconstruct the sub-surfaces to allow a stronger bond for the tiles. This will eliminate both the lifting problem and the tripping hazard to patrons.

Replace Raised and Damaged Concrete Walks at Stations

This project will replace concrete walkways around all stations that have been raised and damaged by growing tree roots. This situation causes tripping hazards.

Replace Station Signage

This project will update and replace the current porcelain enameled maps and transit information in all BART stations. The replacement is required to reflect the new extension stations and to update current local transit information. This project will provide a graphic display system that is more flexible and more easily updated than the current maps which have not been updated since they were originally installed in 1972. This project must be completed by the time the first extension stations are opened.

Rehabilitate Station Security Gates

This project will replace heavy usage security gates that are in the worst condition after being in service for over twenty years---a subsequent project would replace those gates that are worn but not yet in critical condition. The maintenance department is repairing failures in these gates on a daily basis. In addition, gate parts for repairs are difficult to obtain as the gates have become obsolete. When gates fail and parts are not available to make repairs, they are out of service for long periods of time and in some cases the situation requires additional security measures to protect the station. This project will also convert some manually-operated security gates at stations to motorized gates.

Anti-Skid Groove-and-Fill on Station Stairs

This project will provide anti-skid surfaces on the stairs which will reduce slipping hazards to patrons. Wet stairways during rainy seasons present slipping and falling hazards to passengers.

Key Station (ADA)/Accessibility Improvements

This project will provide federally-mandated accessibility modifications to 20 Key Stations. The project is designed to remove architectural barriers in existing stations by providing new accessible route information and signs, modifying the street elevator at the 12th Street Station, and removing other barriers that are potential safety hazards. This project is needed to comply with ADA requirements and to improve passenger safety.

Accessible AFC Equipment (ADA compliance)
This project will provide at least one new accessible fare vendor, faregate and addfare machine for each Key Station. It will also provide modifications to credit/debit vendor equipment to make it accessible and in compliance with the ADA requirements.

Replace Automatic Fare Collection Equipment
This project will replace all faregates, ticket vendors and addfares throughout the AFC system in the 34 existing stations. The project needs to be done to: decrease revenue collection and maintenance costs through use of more modern servicing modules; increase revenue security and accountability through use of sealed coin and bill units; implement an upgraded Data Acquisition System; and increase equipment availability for customers through greater reliability and maintainability. The urgency of the project is driven by the need to capture maintenance and security benefits, while avoiding deterioration of customer service levels as existing equipment approaches the end of its useful service life.

Additional Fare Gates at 12th Street, Embarcadero, Pleasant Hill, and El Cerrito
This project will add faregates at these stations to reduce increasing passenger congestion levels. Severe congestion at faregates at these stations has been caused by increased patronage.

Stations Rehabilitation also includes the following representative projects:

- Replacement of the most unreliable station escalators and complete rehabilitation of all other escalators and elevators.
- Replacement of deteriorating bicycle lockers.
- Replacement of roofing at stations systemwide.
- Replacement of the light standards on platforms of outdoor stations.
- Replacement of the sewage pumps in underground stations.
- Replacement of bus transfer machines.
- Replacement of station public address systems.
- Reconfiguring the restrooms at Embarcadero, Montgomery and Powell Street Stations to add more facilities, and refurbishing of all station restrooms.
- Replacement of obsolete station lighting systems.
- Refurbishment of landscaping and irrigation systems.
- Replacement and reconditioning of various safety systems in stations.

D. CONTROLS & COMMUNICATIONS REHABILITATION

The purpose of this program of projects is to rehabilitate BART's controls and communications systems, including replacement of deteriorated and obsolete components and subsystems. The highest priority Controls & Communications Rehabilitation projects include:

NXTGEN Program

This project will replace obsolete on-line operational computer control systems. The systems included in this budget are the Destination Sign System (DSS), the Data Acquisition System (DAS), the Train Information Monitor System (TIM), and the Central Computer System (CCS). This project is needed to replace the 20-plus year old computers running the DAS and DSS systems and the 10-year old CCS computers. The NXTGEN program is scheduled to be completed in time to meet computer system requirements for the start-up of the extensions projects.

Replace Radio Network

This project will design, furnish, and install a systemwide multi-frequency, trunked radio network to replace the equipment used by train operations, BART Police, and maintenance forces. The current radio system has significant shortcomings, both in terms of capacity and reliability, which have frequent negative operational impacts and occasionally affect safety. This project complements the separately funded radio network system for the Phase I Extension program. BART has already been assigned broadcast frequencies, which are increasingly difficult to obtain. Federal radio regulations require that BART put these new frequencies into service within a few years or forfeit them to other users.

Advanced Automatic Train Control (implementation phase)

This project will install an advanced train control technology which will enable the BART system to nearly double its train carrying capacity. This project would allow system throughput to increase from the current 17 trains per hour up to 30 trains per hour. The system will be one which can be installed over the existing control equipment with relative ease and no service disruptions. The project will help BART to meet the increased demands on the system as headway reductions become necessary in the future.

Replace Tektronix Consoles in Central

This project will replace existing Tektronix work stations that are obsolete and cannot be expanded. In addition, the extensions budgets will provide for an increase in the number of work stations overall. This project provides the display hardware, local area network (LAN) interface equipment, software, installation and testing to make the units fully functional in BART's Central Control facility. The goal is to have these units operational for the start of revenue service for the extensions.

Replace Maintenance Vehicle Detection Devices

This program replaces the maintenance vehicle detection devices used in specialized high-rail maintenance vehicles. These vehicle detection devices are required to allow Central Control to observe the location of on-track maintenance vehicles. This detection system serves as a safety device to prevent trains from entering into the work area where a maintenance vehicle is occupying mainline track. The units presently being used have been in service over 20 years and failure rates are increasing. When a failure occurs, the high-rail maintenance vehicle must be removed from mainline track, per PUC requirements, resulting in non-productive time in maintenance work schedules requiring single tracking.

Controls & Communications Rehabilitation also includes the following representative projects:

- Replacement of the deteriorating train destination signs on station platforms.
- Provision of portable radios for station agents.
- Replacement of the Digital Transmission System.
- Replacement of failing control and communications cabling.
- Replacement of the MIS mainframe computer and software.

E. SHOPS AND YARDS REHABILITATION

The purpose of this program of projects is to address the deterioration of the shops and yards due to two decades of continuous use and age, and to provide adequate facilities to store and maintain a growing fleet of revenue vehicles. These projects will improve passenger transit service by improving revenue vehicle reliability through better maintenance, and by reducing vehicle out-of-service time and keeping as many vehicles in service as possible, thereby reducing train crowding; make the shops and yards safer places in which to work; provide cost savings to the District by reducing maintenance turn-around time and eliminating travel time to and from vendors; and improve the efficiency of the shops and yards by providing employees with dependable equipment needed to perform their duties effectively. The highest priority Shops & Yards Rehabilitation projects include:

Non-Stock Inventory (repairable parts provisioning)

The intent of the program is to project and maintain adequate inventory of all repairable parts in support of all transit vehicles, station and field equipment, and AFC equipment. Failure to provide for these requirements could lead to vehicles out-of-service and potential disruption to normal maintenance and service operations.

Replace Wheel Truing Machine (Hayward)

This project replaces a 20 year old wheel truing machine. The new, more reliable and higher capacity truing machine will allow the District to go to a preventive maintenance program mode for wheel profiles and will result in increased productivity and lower load factors since fewer cars will be held out-of-service waiting for wheel re-profiling.

New Wheel Truing Machine

The new truing machine will accommodate the increased fleet size associated with operation of the extensions and additional vehicles for patronage growth in the future. It will also help the District to go to a preventive maintenance program mode for wheel profiles and will result in increased productivity and lower load factors since fewer cars will be held out-of-service waiting for wheel re-profiling.

Replace Hayward Wheel Press

This project replaces the one existing wheel/axle press with a higher capacity press. This is necessary in order to keep up with the demand for rebuilt axle assemblies and to ensure that axle assemblies can be maintained for the growing vehicle fleet.

Hayward Shop Rehab/Equipment Replacement

This project will rehabilitate the shop and replace maintenance equipment to support BART's growing fleet. This upgrade is necessary to keep up with increased demand, will result in increased productivity, and will reduce the time cars will be held out of service for repairs in the future.

Replace Dust Collector Systems at the Richmond & Concord Shops

This project will bring the Richmond and Concord blow pit ventilation systems into compliance with CalOSHA regulations regarding employee exposure to airborne contaminates.

Replace Parts Washing Facilities in All Shops

This project replaces parts-washing facilities in all shops so the District will comply with environmental requirements. Parts-washing waste water needs to be specially handled to meet environmental discharge laws. The District will be subject to citations and a possible shutdown of facilities if found not to be in compliance.

Replace Rail on Turnouts in East Bay Yards

This program will replace worn 90 pound rail, switch points and stock rails in yard throats. The 90 pound rail section is no longer used in the railroad industry and is very difficult to procure. In order to maintain rail and switch components in yards at a level to prevent derailments and support revenue service, it will be necessary to upgrade 90 pound rail and switch components to 119 pound rail section in heavy usage switching areas. The supply of 90 pound rail is being depleted and once this occurs, rail maintenance schedules will not be met, interfering with yard operations.

Shops & Yards Rehabilitation also includes these other representative projects:

- Adding a second wheel/axle press at the Hayward Shop.
- Expand the materials storage and car storage and maintenance facilities at all of the shops and yards in order to handle the increased fleet size required by the extensions and patronage growth.
- Replace the heating, ventilation and air conditioning systems in the shops.
- Replace the existing transit vehicle car washers located at the East Bay yards.
- Recondition the overhead cranes at the East Bay shops.
- Resurface, restripe and relamp shop parking lots and access roads at the East Bay shops and yards.

F. WORK EQUIPMENT REPLACEMENT

The purpose of this program is to replace worn and obsolete maintenance and service vehicles and maintenance equipment. This equipment includes such items as tools, power generator sets, light towers, grounds and buildings maintenance equipment, shop equipment, test instruments, light-duty highway vehicles, BART police and personnel sedans, and heavy-duty maintenance vehicles (diesel trucks, tractors, and track maintenance vehicles).

BART's maintenance equipment gradually becomes worn from use. Eventually it becomes more economical to replace the old equipment rather than repair it. The ongoing equipment replacement program assures that old, worn out equipment is replaced in a timely manner to minimize overall costs and ensure personnel safety. If this equipment is not replaced, overall costs will increase, maintenance crews will be disrupted by failed equipment, and service to patrons will deteriorate. The highest priority Work Equipment Replacement project is the replacement of gasoline-powered maintenance equipment used in subways with electrically-powered equipment, as required by CalOSHA tunnel safety orders.

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Project Descriptions:
II. EXTENSIONS

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EXTENSIONS PROGRAM

PHASE 1 EXTENSIONS

The purpose of the Phase 1 Extensions Program is to expand the BART rail system to areas not yet directly served by rail but where extension commitments have been made. The areas include eastern Contra Costa and Alameda Counties, southern Alameda County, and northern San Mateo County. This program includes project planning and environmental review; property acquisition; design and construction of fixed facilities; design, procurement and installation of systems elements; and the purchase of vehicles.

Dublin/Pleasanton

The Dublin/Pleasanton project is a 13.8 mile double track extension to the original BART system. It begins with a connection to the existing Fremont BART line just south of the Bay Fair Station in San Leandro and continues eastward in the median of the I-238 and I-580 freeways to the end of the project in the Dublin/Pleasanton area. There will ultimately be three stations along the extension: one in Castro Valley located at I-580 and Redwood Road; a second station at West Dublin/Pleasanton near Stoneridge; and the third one at East Dublin/Pleasanton (at the Dougherty Overhead) near Hacienda Business Park. This project is under construction. Funding for the West Dublin/Pleasanton Station has not yet been secured.

North Concord/West Pittsburg

The North Concord/West Pittsburg project is 7.8 miles of double track and will have two stations. It will run north from the existing Concord Station to a new North Concord/Martinez Station and then east along Route 4 to a West Pittsburg Station. Additionally, improvements will be made to the existing Concord Yard to increase operating efficiency on the extended line. This project is under construction.

Warm Springs

The Warm Springs Extension will extend 5.4 miles of double track from the existing Fremont Station, continuing southward in the railroad corridor and terminating at the Warm Springs Station just south of Grimmer Avenue in Fremont. An intermediate station is planned at Washington Boulevard in the Irvington District. This extension will move BART further toward Santa Clara County and be an important step in "ringing the Bay".

Colma

The Colma Station Extension will add one station approximately one mile past the Daly City Station. This will relieve future access and traffic circulation problems at Daly City and provide additional system access via I-280 and Route 1. It is also the first leg of the extension to San Francisco International Airport. This project is under construction.

San Francisco Airport

The San Francisco Airport Extension will extend the BART system an additional 6.4 miles into San Mateo County with three additional stations from the Colma Station (currently under construction) to or near the San Francisco Airport. This extension will help to reduce Bay Area-wide traffic congestion, improve air quality and provide a convenient, cost efficient transportation link between BART and CalTrain and to the West Bay communities.

OTHER EXTENSION PROJECTS

Oakland Airport Connector

The Oakland Airport Connector Project will directly connect the BART Oakland Airport/Coliseum Station with the Oakland Airport terminals, providing improved transit service for air travellers and air terminal employees. BART is currently completing an FTA-supported feasibility study as the first phase of the Suspended Light Rail Technology Pilot Project, and anticipates selection to proceed to a second phase, preliminary engineering and environmental documentation, by January 1994. BART hopes to begin construction by FY 1996.

"FastTrack" Commuter Rail System

Three new commuter rail lines serving the corridors planned for Phase II and III BART extensions (and beyond) would add more than 200 miles of active track to the regional rail network. This would provide near-term critical intermodal connections to alleviate bottlenecking in some of the most heavily congested commuter corridors in the Bay Area. This program could utilize leased equipment and trackage rights in order to be brought on-line as quickly as possible, within two years of funding approval.

Intermodal Stations

Ancillary to the "FastTrack" commuter rail program, new links would be created among the Bay Area's many transit systems through a series of twelve new Intermodal Transit Stations. These links would provide easy transfers to other regional and intercity systems.

Project Descriptions:
III. SEISMIC RETROFITS

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SEISMIC RETROFIT PROGRAM

The purpose of this program of projects is to bring the existing system up to the latest seismic standards to enhance the system's ability to safely endure severe earthquakes and quickly return to service by:

- Improving the structural strength of BART's aerial structures and Transbay Tube joints in order to withstand greater seismic forces.
- Improving the system of seismic detectors which slows or stops trains in the event of an earthquake.
- Installing automatic seismic gas shut-off valves.
- Providing engine-generators for the event of a possible PG&E power loss.
- Provide restraints for overhead crane structures at maintenance shops.
- Provide tie downs for the stands that transit vehicles are supported on during maintenance at the shops.

The structural strengthening components of this project will bring existing structures up to current seismic standards, and improve the ability of the system to withstand major earthquakes with little or no damage. Other components of this project will augment earthquake preparedness systems already in place to provide more coverage, more detailed and accurate information, and to permit faster response to protect the safety of the rail system, its patrons and employees.

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Project Descriptions:
IV. SERVICE IMPROVEMENTS

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SERVICE IMPROVEMENTS PROGRAM

NEW TRANSIT VEHICLES

This project would procure up to 150 additional rail transit vehicles beyond those which are to be funded within the budgets for the Phase 1 extensions. These vehicles, planned as part of the Track One program of projects, would accommodate growth on the existing system up to 370,000 daily trips.

WEST OAKLAND PARKING EXPANSION

This project would be constructed in the area near West Oakland Station that is being considered for use by other agencies for the Cypress Corridor freeway replacement and inter-city rail service. The scope, cost and schedule for the project is subject to the results of these various planning activities, with which BART is cooperating. Conceptually, this project is to add approximately 1,000 parking spaces to the West Oakland Station in a new surface lot, and it could be integrated into a larger project for intermodal improvements. This station experiences severe patron access constraints. The parking fills early in the morning peak, limiting access to the system later in the day when ample passenger-carrying capacity is available on trains. This negatively impacts potential patronage growth and fare revenue generation. This project would help alleviate this constraint.

ADDITIONAL CAPACITY ENHANCEMENT

The basic program of capacity enhancement projects listed as individual projects in this *Capital Improvement Program* is intended to accommodate patronage growth to 370,000 daily trips. The Service Improvement program area also includes an Additional Capacity Enhancement subprogram which would go well beyond the basic program, to accommodate growth to 500,000 daily trips. The Additional Capacity Enhancement subprogram is conceptual and still under development, but it would include additional transit vehicles; additional traction power and train control rehabilitation and upgrades; other reliability improvements; improved station circulation and access; and further expansion of maintenance shop and storage yard facilities beyond the projects listed separately in this *Capital Improvement Program*. This cost indicated for this item provides a preliminary estimate of what these additional improvements might entail.

EL CERRITO PARKING EXPANSION

Contra Costa County Measure C provides $5.5 million in funding for BART patron parking expansion in the City of El Cerrito. BART and the City are currently cooperating on a study to determine at which station additional access improvements are most needed and manageable. The scope, cost and schedule of this project will be finalized upon completion of that effort.

UNION CITY PARKING EXPANSION AND TRANSIT CENTER

This project would add approximately 600 new patron parking spaces in a new surface lot, and 13 new bus bays and transfer patron amenities.

FRUITVALE PARKING EXPANSION AND TRANSIT CENTER

This project would add approximately 500 new parking spaces to the Fruitvale Station in a multi-level parking structure, and seven new bus bays and patron amenities. Further development of this project will be in cooperation with the City of Oakland and local interests involved in the planning of a larger economic development project.

ROCKRIDGE PARKING EXPANSION

This project would add approximately 600 parking spaces to the Rockridge Station on a second level deck. Further development of this project has been suspended at the request of the City of Oakland.

ALAMEDA PARK/RIDE

This project would provide an intermodal facility to accommodate off-street auto-to-bus transfers in Alameda. This project would include a parking lot and passenger waiting and bus loading areas. A specific site has not been identified. This project would support local transit service by making the transit option more attractive. The result of this improvement would be an increase in transit patronage.

NEW ADMINISTRATION BUILDING

This project would acquire a new administration building large enough to accommodate all of the District's administrative employees in a centralized location. It is often necessary for BART employees to conduct business with each other in person. Staff time could be used much more productively if employees did not have to travel among BART's various locations throughout Oakland in order to get things done. The acquisition of a new administrative building would improve efficiency and productivity.

STATION ENTRANCE CANOPIES

This project would install 50 canopies over the escalators and pedestrian entry ways at ten underground stations in San Francisco, Oakland and Berkeley. This project would result in weather protection for patrons entering the stations, reduced escalator maintenance costs, less escalator down time, increased security during non-revenue service periods and generally improved access to stations.

Project Descriptions:

V. RESEARCH, DEVELOPMENT & DEMONSTRATION

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RESEARCH, DEVELOPMENT & DEMONSTRATION PROGRAM

Advanced Automatic Train Control (research phase)

The District is currently involved in the development and demonstration of an advanced train control technology which will enable the BART system to nearly double its train carrying capacity by allowing decreased headways between trains. See the discussion of AATC in the Controls & Communications Rehabilitation section.

Superconducting Magnetic Energy Storage (SMES)

Two related projects are intended to study the technical and economic feasibility of utilizing SMES technology to minimize voltage sag problems in critical locations in the system. Addressing the voltage sag problem is critical to plans to operate trains at closer headways to support projected future service levels. Two different approaches are being pursued. A Federal Transit Administration (FTA) grant is currently funding a study to evaluate the feasibility of applying SMES to the BART system. As part of this effort, BART expects to test a "solenoidal" SMES device. BART is also cooperating with private industry in applying for Advanced Research Project Administration (ARPA) defense conversion funding to develop and test a SMES device using the "torroidal" approach.

Electric Station Cars

The District is funded for a demonstration program to purchase 45 electric cars to be used by BART and PG&E employees for access to and egress from stations. The project will demonstrate that with "station cars", transit can provide an all electric door-to-door service that will attract new patronage.

Joint Development Entrepreneurial Study

This project will define and assess different public/private institutional arrangements to more effectively implement BART's Joint Development program. The project includes development of model documents for implementation of a selected arrangement, and development pro formas for up to three selected station sites to assess the viability of joint development. The FTA will use this study's report as a national model. The need to identify more effective public/private arrangements for joint development at BART is in keeping with the growing need to coordinate population and employment growth along with the BART fixed rail system, and thus reducing traffic.

Automatic Transit Scheduler

This project will establish a comprehensive telephone information service for all transit agencies within the region to deliver a complete trip planning system, including route, schedule and fare information for each link. The project is needed to consolidate such information from each property and present it in a form most useful for a transit patron to plan and complete any point-to-point trip in the region. This project constitutes a first phase rollout of a demonstration project including BART, AC Transit, and the County Connection. Later phases are planned to expand to include other transit operators.

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July 1995 - June 2005 (FY96-FY05)

SAN FRANCISCO BAY AREA
RAPID TRANSIT DISTRICT

Draft

CAPITAL IMPROVEMENT PROGRAM

JULY 1995 THROUGH JUNE 2005 (FY 96 - FY 05)

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BART

Draft
July 14, 1995

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Introduction:
Capital Improvement Program

July 1995 through June 2005

***Fiscal Year 1994-95** saw major advances in the development of the Bay Area Rapid Transit District (BART) system.*

Service Improvements completed in the last year include three major parking structures, which added a total of 2,175 new parking spaces, and delivery of 80 new transit railcars began. Modifications were made to the train control system which will allow BART to incrementally increase the frequency of trains through the most congested segments of the system. And funding was secured for the development and testing of an even more advanced, high-tech train control system, which promises the ability to permit further significant increases in BART's train carrying capacity by the late 1990's. And funding was also secured to begin capital projects necessary to comply with the Americans With Disabilities Act (ADA).

System Extensions are moving forward rapidly. Construction is almost complete on BART extensions to Colma and North Concord-Martinez. The further extension to Pittsburg-Bay Point and the Castro Valley/East Dublin-Pleasanton are in advanced stages of construction. And substantial progress is being made in the planning, design and funding of the proposed extension from the new Colma Station to San Francisco International Airport .

System Rehabilitation is becoming increasingly critical, and important developments are underway in this area, too. Rehabilitation of the original fleet of rail cars is at the heart of this program, and the contract to accomplish this has been executed. BART and the Metropolitan Transportation Commission (MTC) concluded one of the most important regional transit funding pacts of recent years, setting forth a cooperative plan to fund $650 million toward the cost of rebuilding the fleet and other critical components of the BART system.

***Fiscal Year 1995-96** will see the close of one chapter of BART's history and the opening of another. The first extensions will come on-line after many, many years of planning, financing and building. Implementation of the San Francisco Airport extension is expected to move forward rapidly. And rehabilitation of the system will take center stage to carry BART and its customers into the 21st Century.*

Context of the Program

BART faces enormous challenges as it prepares to enter the 21st Century with this *Capital Improvement Program.* The District is well into building a multi-billion dollar program of rail system extensions, while at the same time undertaking an unprecedented program of rehabilitating and upgrading the existing system, and improving system accessibility -- all while maintaining and even improving the level of service provided.

An Aging System:

The System Rehabilitation Program

When BART initiated service in 1972, it was state-of-the-art: the most modern, most automated rail transit system in the world. Now, more than two decades later, BART is no longer the same sparkling new system. Although the level of service provided has increased dramatically over these 23 years and the system is operating at its greatest reliability ever, now is the time to undertake a major program of system rehabilitation to ensure that service does not deteriorate in the future.

BART now carries twice as many passengers daily than in its early years, patronage is still growing, and the equipment is aging. This combination puts the BART system at risk if steps are not taken immediately to ensure the system's future reliability. Most of the hardware that comprises the BART rail system will reach the end of its operational lifetime over the next few years unless it is rebuilt or replaced. Rehabilitation funding requirements are generated from a planned replacement cycle based on useful life. Examples of the aging of the BART system include:

- the typical BART railcar has accumulated over a million miles of travel;
- the doors on a typical car have cycled more than three million times;
- nearly a billion people have been transported in these vehicles, used the farecard vendors, activated the faregates, and ridden the escalators or walked the stairs;
- many of the electronic and computer systems which heralded a new era of rail transit technology a generation ago are now becoming obsolete, and therefore increasingly difficult and expensive to maintain.

This onset of aging makes it essential for BART to begin rebuilding before it experiences the declining spiral of effects that many older rail transit systems have experienced due to their inability to attend to preventative maintenance and

rehabilitation in a timely manner. This is not glamorous, high-visibility work, and it is very expensive. But it is essential, and in the long run it is much more cost effective to rehabilitate systems before reaching the point of failure than to try to fix problems after they become obvious. This will also avoid future degradation of service and consequent loss of patronage and fare revenue.

BART must not only maintain its current level of service while undergoing both expansion and rebuilding, but also provide even higher levels of service to meet the needs of a growing market. This *Capital Improvement Program* reflects this need in identifying major rehabilitation for transit vehicles, train controls, stations, communications systems, maintenance facilities and other parts of the BART physical plant.

A Growing System:

Planned Growth and New Services

BART patronage has grown dramatically in the last decade, about 80 percent growth from under 140,000 trips on an average weekday in the early 1980's to a weekday average of over 248,000 daily in fiscal year 1995. Patronage is expected to continue to grow in the future, and this will require additional facilities and capabilities. While BART invested heavily in increasing its people-carrying capacity over the last ten years, continued growth in patronage will require continued capacity expansion. In order to accommodate growth expected to reach 361,000 trips per day in the next decade, this capital program calls for increases in the supply of power to operate more and longer trains, an advanced system of automatic train control to increase the frequency of train service, and additional maintenance facility capacity.

BART has completed a program of significant expansion of patron parking over the past few years. In the summer of 1994 alone, new patron parking structures were opened at Concord, Walnut Creek, and Hayward Stations, adding 2,175 spaces. The next few years will see BART's station access improvement program focusing on "intermodal" bus access projects. These projects, several of which are just getting underway, will increase the capacity to handle more feeder buses at the stations, along with providing more comfortable amenities for patrons who transfer to and from buses at BART stations. In addition, a highly innovative grant-funded demonstration program just getting underway involves a test of electric "station cars" as one more possible means of improving connections at both ends of BART rail trips.

Replacement of worn and unreliable escalators and deteriorating farecard vending equipment, along with other station rehabilitation projects and implementation of better interoperator fare mechanisms, will improve the flow of patrons through the stations, while providing increased customer convenience.

The basic program of capacity enhancement projects, such as those indicated above, is intended to accommodate patronage growth to 361,000 daily trips. Beyond this goal, the *Capital Improvement Program* also includes an Additional Capacity Enhancement subprogram which would go well beyond the basic expansion program, to accommodate growth to 500,000 daily trips. The Additional Capacity Enhancement subprogram remains conceptual and is still under development, but it would include additional transit vehicles, additional traction power and reliability upgrades, further improvements to station circulation and access, and further expansion of maintenance shop and storage yard facilities beyond the specific projects listed separately in this *Capital Improvement Program*. This cost indicated for this item provides a preliminary estimate of what these additional improvements might entail.

Also continuing in this year's *Capital Improvement Program* is BART's proposed network of regional commuter rail service. The District remains committed to implementing the long-planned Phase 2 and Phase 3 extensions of BART rail service to Antioch, Livermore, northwestern Contra Costa County, the South Bay, and other corridors. But anticipated funding limitations during the next ten years will almost certainly push their completion beyond that time frame. As a near-term interim solution, a network of commuter rail service using conventional diesel locomotives and standard passenger railcars could be placed into service in these same extension corridors at much lower costs and within two years of funding approval.

System Accessibility:

Americans With Disabilities Act Compliance

The BART system has been hailed as a model of public transit accessibility for persons who are elderly and/or disabled ever since the system began operation. For two decades it was held up as a standard worthy of emulation by other systems. To this day BART remains one of the most accessible rail systems in the world. But the federal Americans With Disabilities Act (ADA), which went into effect for transit operators during fiscal year 1993, has set new and even more comprehensive standards than those currently offered by BART or any other rail transit agency in the world.

The capital program required to bring the existing BART stations into compliance with the ADA (the "Key Station" program of projects) is currently estimated to total approximately $17 million. Recent programming of Section 9 funds is allowing BART to move aggressively to implement projects necessary to come into compliance with the new regulations.

Organization of the Program

This *Capital Improvement Program* is organized in two basic dimensions: Program Areas and Project Priorities. Program Areas is the primary organization. There are five major programs into which all of the approximately 250 separately listed projects are organized. Several of the Program Areas have sub-program categories as well.

Program Areas

I. **System Rehabilitation**
   A. Rolling Stock
   B. Mainline
   C. Stations
   D. Controls & Communications
   E. Shop & Yards
   F. Work Equipment
II. **Extensions**
   A. Phase 1 Extensions
   B. Phase 2 & 3 Extensions Planning
   C. Oakland Airport Connector
   D. Commuter Rail System
III. **Seismic Retrofit**
IV. **Service Improvements**
   A. Current Planned Expansion
   B. Additional Capacity Enhancement
V. **Research, Development & Demonstration**

Track One and Track Two Programs

This *Capital Improvement Program* lists all of the projects which the District would implement if funding were available. However, a program of this size is currently beyond the level of funding which can reasonably be assumed to become available through existing sources over the next ten years. Therefore, in accordance with the approach being taken by the Metropolitan Transportation Commission (MTC) in its development of the 20-year *Regional Transportation Plan*, BART's CIP is divided into two "tracks", into which projects are assigned. Track 1 is "financially constrained" per MTC's direction, and comprises those projects that are essential to continued safe and reliable operation of the system. Track 2 includes projects for which the projected future levels of existing funding sources are inadequate. Implementation of Track Two project would require larger allocation to existing federal and state programs in the future, or the creation of new funding sources. Definitions of the five levels of priority are as follow:

Definitions of Project Priority Classifications

Each project has been assigned a priority level, ranging from a high of 1 to a low of 5, based on degree of criticality to maintenance of the system, safety, operation of the extensions, and service improvements.

1 Mandated by law or code, safety-critical, District assets jeopardized, system operations and patron service levels will be severely impacted, or essential to ensure operation performance of the extensions lines.

2 System operations and patron service levels will be seriously impacted, safety-sensitive, District assets at risk, operating costs will be severely impacted, or introduction of technological advancements which significantly improve operational performance or result in significant cost efficiencies.

3 Operating cost or performance levels will be affected, increased service levels or system improvements will be delayed, District goals will not be achieved.

4 Routine replacement of worn or obsolescent equipment or systems, desirable system improvements, or reduced maintenance costs.

5 Identified need, but no immediate or near-term future cost or service impact.

There is also a time element involved in project priorities. Priorities as identified in this program relate to needs *at this time*. Any rehabilitation, replacement or improvement not implemented according to scheduled need may rise in priority at a later date if deferred implementation increases the risk to operations, safety, or impact on operating costs.

Planned Expansion and Additional Capacity Enhancement

There is one further organizational strategy used in this plan. The "Planned Expansion" listing in the Service Improvement program area includes those projects which are designed to accommodate patronage growth to 361,000 daily trips. The Service Improvement program area also includes an Additional Capacity Enhancement subprogram in Track 2. The Additional Capacity Enhancement subprogram is conceptual and still under development, but it provides a preliminary estimate of the cost of various system improvements which would be necessary to accommodate growth to 500,000 daily trips.

Funding Strategy

This *Capital Improvement Program* forecasts a need of just over a billion dollars to fund the full range of desirable system rehabilitation projects over the next ten years. In May 1994, BART and the Metropolitan Transportation Commission (MTC) jointly adopted a cooperative funding program to address system rehabilitation needs over the next six years. Funding for expansion projects, including extensions beyond West Pittsburg-Bay Point, East Dublin-Pleasanton, and San Francisco International Airport remains an open question at this time. This uncertainly currently affects the West Dublin/Pleasanton extension station, the Warm Springs extension and the proposed regional commuter rail program, the Seismic Retrofit Program, and possible future capacity expansion.

Tabular summaries of the proposed Track 1 and Track 2 funding strategies are presented in Tables 1 and 2 on pages 14 and 15.

Funding Strategy by Program Area

System Rehabilitation

A and B Car Rehabilitation

Rehabilitation of the over 21-year-old BART system is at the heart of BART's capital program. The largest single component of system rehabilitation is rebuilding the original fleet of A- and B-cars to extend their useful lifetimes. The budget for this effort is currently set at $475.9 million, including the cost of "float" cars to maintain operating fleet size while A&B cars are out of service.

The funding program jointly adopted by BART and MTC for this project includes the programming of $239.5 million in FTA Section 3 funds, $30 million in federal STP/CMAQ funds, almost $17 million in state Proposition 108 and TCI funds, and $24 million in Bridge Toll funds, over the period fiscal year 1995 through fiscal year 2004. The funding plan requires BART to provide the balance of the funding, or approximately $165.5 million.

On April 1, 1995 BART put in place the first of a planned series of fare increases to generate funds for system rehabilitation, among other needs. A bond issue made in May 1995 will provide the first increment of the $165.4 million that BART must contribute as local match for car rehabilitation.

Other System Rehabilitation

Other than rehabilitation of the fleet of A- and B-cars, the unfunded Track One BART system rehabilitation program totals approximately $417.9 million. The new BART-MTC system rehabilitation program includes significant funding for these other system rehabilitation needs, in addition to funding for vehicle rehabilitation. Specifically, the plan sets forth a target of $140.3 million in FTA Section 9 funds over the ten-year period. BART also anticipates receiving approximately $73.2 million in non-traditional transit funding dedicated to specific projects or types of projects, as described below, which are part of the Track One rehabilitation program of projects. This funding scenario leaves a balance of $399.5 million, which could be generated though future bond issues backed by fare increases.

Advanced Automatic Train Control (AATC)

BART is pursuing new technology which promises much greater sophistication in train control, and which will permit significant increases in the train-carrying capacity of the existing trackway. The technology under study is derived from recent defense industry advances in locational tracking of vehicles and equipment. The District, together with private sector partners, have secured $28.2 million federal defense conversion funds and private sector funding for the first two phases of the project, which involves additional technology development and field testing. If these phases prove successful, the District will pursue additional funds to implement the project. These sources would include new state and local sources anticipated to become available in the next few years, private sector contributions, additional defense conversion funds, and other possible federal funds. The total estimated cost of the project is approximately $64.7 million, of which $36.5 is unfunded.

Telecommunications Joint Development

BART has entered into an innovative agreement with Metropolitan Fiber Systems Network Technologies, Inc. (MFSNT), which will provide the District with a state-of-the-art, fully integrated telecommunications system. In exchange for providing BART with a new telecommunication system, MFSNT will have the right to market BART's right-of-way to private telecommunication companies with BART receiving 91 percent of the generated revenue. Thus, the agreement between MFSNT will internally finance BART's new telecommunication system—revenue generated for BART will be used to pay off the capital cost of the new system.

Extensions Program

Castro Valley and East Dublin-Pleasanton

This extension is fully funded for these two stations, assuming all programmed funding is realized as currently planned. BART will continue seeking funding unrelated to the MTC Resolution 1876 regional agreement, for completion of the third station at West Dublin-Pleasanton.

North Concord and Pittsburg-Bay Point

This extension is considered fully funded for two stations, assuming all programmed funding is realized as currently planned. Funding is also programmed in the Contra Costa Transportation Authority's Strategic Plan to provide $104 million in Measure C sales tax revenues to continue the extension out to Railroad Avenue.

Warm Springs

The Warm Springs Extension was estimated to cost $540.8 million in 1990. The current funding package shows a shortfall of approximately $192.8 million. The cost and financial plan for this project will be updated when a new project implementation schedule is completed.

Colma

This extension is fully funded, assuming all programmed funding is realized as currently planned.

San Francisco Airport

The proposed extension from the new Colma Station to San Francisco International Airport, with intermediate stations, is currently estimated to cost $1.269 billion (for the design option of tunneling beneath the airport). To date, $86.6 million has been allocated to this proposed extension for project development, preliminary engineering and environmental impact assessment. Various design options are currently under analysis, which could affect the estimated project cost. The funding plan for the project as currently defined is comprised of a total $800 million in federal Section 3 "New Starts" funding, $99 million from San Mateo County Transit (SamTrans), &98 million in State funds, $200 million in a commitment from San Francisco, and $72 million in other state and local sources.

Oakland Airport Connector

BART is competing for funding for development and implementation of the Oakland Airport Connector using Suspended Light Rail Transit technology under a special federal demonstration funding program for this type of project. If the FTA selects the District to continue with the project, the next step in the process is completion of an EIR/EIS and preliminary engineering, for which $4 million in additional federal funds are currently being sought. If this funding is realized, BART and the Port of Oakland together will need to provide $1 million in local match. If the results of these studies are positive, BART will seek implementation funding in cooperation with the Port of Oakland.

Commuter Rail System

BART has proposed this system for regional funding consideration through the RTP process. It is assumed that additional funding would be provided by those jurisdictions which would benefit from these services and which are not part of the BART District.

Seismic Retrofit Program

At the time of its construction, BART was built to the most demanding seismic standards of the day. This level of design has served the region extremely well. During the time that the San Francisco-Oakland Bay Bridge and other regional freeway facilities were out of service for repairs following the major earthquake of October 1989, BART continued to operate smoothly and without incident.

Seismic design has developed considerably over the last 25 years, however. BART's extensions are being built to these new, more stringent standards. BART has proposed that the entire existing system be brought up to these new standards as well. This would be a major undertaking, with a current cost estimate of $229.4 million. This program is not fundable under current projections of future allocations of traditional transit funding sources, therefore this is listed as a Track 2 project. It is the BART District's position that a dedicated funding source should be identified for this proposed program, similar to the state program which is currently retrofitting the highway system for seismic strengthening. There is no other existing funding source capable of handling a program of this magnitude without seriously compromising transit operations in the region. BART intends to carefully review this matter with the California Department of Transportation (Caltrans) and the California Transportation Commission (CTC), as well as the Metropolitan Transportation Commission (MTC).

Service Improvements

In the area of Service Improvement, the BART program indicates the desirability of upgrading the traction power supply system and expanding the capacity of the Concord and Hayward vehicle maintenance shops. These projects are still conceptual, pending further analysis, and funding cannot currently be identified from available sources, so these are Track 2 projects at this point in time. BART and AC Transit have jointly developed a program of transit center (bus-to-BART) improvements which could be implemented at various BART stations. Several of these proposed projects are programmed for Section 9 funding through AC Transit. No other funding is currently available for such projects, so they are listed as Track 2 until such time as the programmed AC Transit funding is secured.

Research, Development & Demonstration

BART has embarked on an ambitious program of technology research, development and demonstration. The District has an existing grant to study the feasibility of using ***Superconducting Magnetic Energy Storage (SMES)*** as a means of supplementing traction power in locations where it is technically very difficult and/or too expensive to install additional conventional power supply, such as deep in the Transbay Tube. If the current initial studies prove promising, BART will seek additional funding to further develop and ultimately implement SMES technology.

Another area of technological promise under study is ***Electric "Station Cars"***. BART is a member of state and national consortia working to demonstrate the use of electric vehicles as "station cars". The concept is to provide an all-electric, non-polluting transportation system linking public rail transit with the need for personalized trip-making at both the origin (home) and destination (work, shopping, recreation, etc.) ends of the trip. The District has been awarded $1.4 million in demonstration funding from defense conversion sources, the Bay Area Air Quality Management District, PG&E and Caltrans. Additional funding from other sources will be pursued as needs and opportunities arise.

Other areas in which BART is exploring the possibilities of leading edge technological developments and opportunities for R,D&D funding include ***Active Noise Abatement, Artificial Intelligence, Advanced Traveler Information Systems, Security Enhancement****, and* ***Automated Test and Monitoring Equipment****.*

R,D&D funding is expected to continue to come from sources other than those typically available to transit, and will therefore not compete with or otherwise compromise the delivery of transit service in the region.

BART Reserves Available for Project Funding

Following the May 1995 bond issue, the District currently has approximately $138 million available to use as local match to grants or to fund critical projects entirely with BART funds where no grant funding is anticipated. Future fare increases will be considered as necessary in order to provide BART funds sufficient to match and supplement grants as required to accomplish at least the Track 1 program of projects.

Proposed Track 1 Funding Strategy

BART FY 1996-2005 Capital Improvement Program

Draft

17-Jul-95

Track One Program	Total Cost	Funding to date	Remaining Funding Req't.	Section 3	Section 9	STP/ CMAQ	Bridge Tolls	Other Fed. & St.*	Other *	BART	Cumul. BART	Notes
Extensions Program												
to East Dublin-Pleasanton	514.1	514.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
to West Pittsburg-Bay Point	505.7	505.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
to Colma	170.2	170.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
to San Francisco Airport	1,269.0	86.6	1,182.4	742.4	0.0	0.0	0.0	83.5	356.5	0.0	0.0	*1*
to Warm Springs **	540.8	348.0	192.8	0.0	0.0	0.0	0.0	0.0	192.8	0.0	0.0	*2*
Rehabilitation Program												
A/B car rehab	475.9	54.5	421.4	203.3	0.0	30.0	24.0	0.0	0.0	164.1	164.1	*3*
Other rolling stock rehab	9.3	6.7	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.6	166.7	
Advanced auto. train control	64.7	28.2	36.5	0.0	0.0	0.0	0.0	16.6	16.6	3.3	170.0	*4*
Radio system replacement	40.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	170.0	*5*
Other Priority 1 Rehab ***	204.6	47.2	157.4	0.0	140.6	0.0	8.7	0.0	0.0	8.1	178.1	
Priority 2 Rehab	231.8	10.4	221.4	0.0	0.0	0.0	0.0	0.0	0.0	221.4	399.5	
Research, Development & Demonstr.	TBD	3.6	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	399.5	
TRACK ONE TOTALS	4,026.1	1,815.1	2,214.5	945.7	140.6	30.0	32.7	100.1	565.9	399.5	399.5	

NOTES

- * *See numbered notes 1, 2 and 3 below for detail on "Other Federal & State" and "Other".*
- ** *Warm Springs cost estimate prepared in 1990; subject to updating when a new schedule is determined.*
- *** *Excluding A/B car and other rolling stock rehabilitation, advanced auto. train control, and radio system replacement, which are listed separately.*

1 *Estimated cost of proposed project in current Locally Preferred Alternative. Proposed funding plan includes a total of $800M from FTA Sec. 3, $99M from Samtrans, $98M in state funds, $200M in a commitment from San Francisco, and $72M from other state and local sources.*

2 *Additional funding must be secured to implement the Warm Springs extension.*

3 *Per BART-MTC adopted cooperative funding plan. $15 million in CMAQ is considered assured; $15 million in STP may have to be programmed through county Congestion Management Agencies (CMAs).*

4 *Proposes funding from defense conversion funds and/or new federal, state and/or local sources, and from private sector contributions.*

5 *Funded 100% through vendor financing.*

Proposed Track 1 and Track 2 Funding Strategy

BART FY 1996-2005 Capital Improvement Program

Draft

17-Jul-95

	Total Cost	Funding to date	Remaining Funding Req't.	Section 3	Section 9	STP/ CMAQ	Bridge Tolls	Other Fed. & St. *	Other *	BART	Cumul. BART	Notes
See Table 1, page 14 for details of Track 1.												
TRACK ONE TOTALS	4,026.1	1,815.1	2,214.5	945.7	140.6	30.0	32.7	100.1	565.9	399.5	399.5	
Track Two Program												
Oakland Airport Connector	137.1	1.1	136.0	0.0	0.0	0.0	0.0	108.8	13.6	13.6	413.1	1
Commuter Rail System	350.0	0.0	350.0	0.0	0.0	0.0	0.0	350.0	0.0	0.0	413.1	2
W. Dublin-Pleasanton Station	28.0	0.0	28.0	0.0	0.0	0.0	0.0	0.0	28.0	0.0	413.1	
Pittsburg-Bay Point to Railroad Ave.	124.0	104.0	20.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	413.1	
Phase 2 & 3 extension planning	TBD	3.3	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	413.1	
Seismic Retrofit	229.4	0.0	229.4	0.0	0.0	0.0	0.0	229.4	0.0	0.0	413.1	3
System Rehabilitation	196.7	8.4	188.3	48.9	60.0	15.0	0.0	TBD	64.4	TBD	413.1	4
Service Improvement	243.4	20.4	222.9	0.0	12.2	0.0	0.0	TBD	210.7	TBD	413.1	5
Add'l. Capacity Enhancement Prog.	2,000.0	0.0	2,000.0	TBD	TBD	TBD	TBD	TBD	TBD	TBD	413.1	
TRACK TWO TOTALS	3,308.6	137.3	3,174.6	48.9	72.2	15.0	0.0	688.2	2,336.7	13.6	413.1	
TOTAL PROGRAM	7,334.6	1,952.4	5,389.1									

NOTES

* *In Track 2, "Other Federal & State" and "Other" refer to possible new funding sources such as a dedicated FTA demonstration program for the Oakland Airport Connector, a new regional gas tax for transit, higher state gas tax and/or increased bridge tolls for transit, new sales tax or other support from counties benefitting from Commuter Rail, and/or other new federal, state or local programs.*

1 *Proposes 80% funding with federal SLRT demonstration funds and 10% local match each from Port of Oakland and BART.*

2 *Includes one-time capital cost and start-up costs for track and equipment. Assumes cost sharing by other beneficiaries of commuter rail program in the region.*

3 *Proposes that program be funded with a dedicated source, similar to the existing state highway bridge seismic retrofit program.*

4 *Proposes that BART continue to receive a share of regional Sec. 3 for system rehabilitation in FY04 and FY05, equivalent to the share to be allocated annually during the period of A/B car rehabilitation. Also proposes a higher level of Sec. 9 funding, additional STP funds, and funds from new sources in outyears.*

5 *The $12.2M in Sec. 9 shown for Service Improvement reflects MTC programming to AC Transit for Intermodal Transit Center development at BART stations.*

Summary of Funding Needs by Program Area

BART FY1996-2005 Capital Improvement Program

			Total	Funding	Funding	Fiscal Year Need*					
		Project Category	**Cost***	**to date**	**Req't.***	**1996**	**1997**	**1998**	**1999**	**2000**	**2001-05**
I.		**System Rehabilitation**									
	A.	Rolling Stock	485,188	61,188	424,000	50,702	37,660	61,455	72,160	65,190	136,833
	B.	Mainline	176,223	12,360	163,863	1,000	39,411	23,170	41,792	8,504	49,985
	C.	Stations	178,327	20,755	157,572	4,500	69,292	20,054	13,855	8,650	41,221
	D.	Controls and Communication	177,763	90,400	87,363	10,730	44,224	8,209	6,360	5,259	12,581
	E.	Shops & Yards	172,140	9,345	162,795	7,910	24,859	6,896	5,600	5,853	111,678
	F.	Work Equipment	33,333	1,359	31,974	1,125	8,809	4,835	3,110	3,900	10,195
		Subtotal	**1,222,975**	**195,407**	**1,027,568**	**75,967**	**224,256**	**124,619**	**142,878**	**97,356**	**362,493**
II.		**Extensions**									
	A.	Phase 1 Extensions	2,999,771	1,624,593	1,375,178	1,182,378	0	0	0	0	192,800
	B.	W. Dublin/Pleasanton Station	28,000	0	28,000	0	28,000	0	0	0	0
	C.	Pittsburg-Bay Point to Railroad Ave.	124,000	104,000	20,000	0	0	0	20,000	0	0
	D.	Phase 2 & 3 Extensions Planning	TBD	3,295	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	E.	Oakland Airport Connector	137,124	1,124	136,000	5,000	0	131,000	0	0	0
	F.	Commuter Rail System **	350,000	0	350,000	0	175,000	175,000	0	0	0
		Subtotal	**3,638,895**	**1,733,012**	**1,909,178**	**1,187,378**	**203,000**	**306,000**	**20,000**	**0**	**192,800**
III.		**Seismic Retrofit**	**229,404**	**0**	**229,404**	**0**	**7,385**	**28,623**	**25,133**	**25,887**	**142,377**
IV.		**Service Improvements**									
	A.	Current Planned Expansion	243,354	20,414	222,940	0	39,600	71,389	23,842	207	87,902
	B.	Additional Capacity Enhancement	2,000,000	0	2,000,000	0	0	0	0	0	2,000,000
		Subtotal	**2,243,354**	**20,414**	**2,222,940**	**0**	**39,600**	**71,389**	**23,842**	**207**	**2,087,902**
V.		**Research, Development & Demonstr.**	**TBD**	**3,566**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**
		GRAND TOTALS	7,334,629	1,952,399	5,389,091	1,263,345	474,241	530,631	211,853	123,449	2,785,572

NOTES:

* *All figures in thousands of dollars (three decimal places dropped), showing the fiscal year in which funding needs to be programmed, in order to be commited to project contracts.*

* *All figures calculated on a base of project cost in calendar year 1995 dollars, escalated at three percent per year, per MTC guidance.*

** *Commuter Rail Program costs based on one-time capital cost and start-up cost for equipment and right-of-way.*

Summary of Funding Needs by Priority Level

Priority Level	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Track One									
Priority 1									
Rehabilitation Program	794,464	176,556	617,908	65,232	139,875	66,179	83,600	71,690	191,332
Phase I Extensions Program	2,999,771	1,624,593	1,375,178	1,182,378	0	0	0	0	192,800
SUBTOTAL	3,794,235	1,801,149	1,993,086	1,247,610	139,875	66,179	83,600	71,690	384,132
Priority 2									
Rehabilitation Program	231,832	10,432	221,400	10,735	39,877	46,416	27,823	23,786	72,763
Research, Development & Demonstra.	TBD	3,566	TBD	TBD	TBD	TBD	TBD	TBD	TBD
SUBTOTAL	231,832	13,998	221,400	10,735	39,877	46,416	27,823	23,786	72,763
Track One Subtotal	4,026,067	1,815,147	2,214,486	1,258,345	179,751	112,595	111,424	95,476	456,895
Track Two									
Priority 1									
W. Pittsburg-BayPoint to Pittsburg-Railroad. Ave.	124,000	104,000	20,000	0	0	0	20,000	0	0
W. Pleasanton-Dublin Station	28,000	0	28,000	0	28,000	0	0	0	0
Commuter Rail System	350,000	0	350,000	0	175,000	175,000	0	0	0
Oakland Airport Connector	137,124	1,124	136,000	5,000	0	131,000	0	0	0
SUBTOTAL	639,124	105,124	534,000	5,000	203,000	306,000	20,000	0	0
Priority 2									
Phase 2 & 3 Extensions Planning	TBD	3,295	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Seismic Retrofit Program	229,404	0	229,404	0	7,385	28,623	25,133	25,887	142,377
Service Improvement Program	117,852	0	117,852	0	8,500	33,949	13,500	0	61,903
SUBTOTAL	347,256	3,295	347,256	0	15,885	62,572	38,633	25,887	204,280
Priority 3									
Rehabilitation Program	162,722	419	162,303	0	30,226	9,569	23,130	1,494	97,885
Service Improvement Program	92,947	20,414	72,533	0	31,100	37,440	3,786	207	0
Add'l Capacity Enhancement Program	2,000,000	0	2,000,000	0	0	0	0	0	2,000,000
SUBTOTAL	2,255,669	20,833	2,234,836	0	61,326	47,009	26,916	1,701	2,097,885
Priority 4	62,600	8,000	54,600	0	10,701	2,190	14,811	385	26,513
Priority 5	3,913	0	3,913	0	3,578	265	70	0	0
Track Two Subtotal	3,308,562	137,252	3,174,605	5,000	294,489	418,036	100,430	27,973	2,328,677
GRAND TOTALS	7,334,629	1,952,399	5,389,091	1,263,345	474,241	530,631	211,853	123,449	2,785,572

I-A. Rolling Stock Rehabilitation

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
Priority 1				1996	1997	1998	1999	2000	2001-05
A&B car rehabilitation									
Rehabilitation program	454,400	54,500	399,900	48,102	26,760	50,855	72,160	65,190	136,833
Float vehicles (5 years of 36 vehicles) *	21,500	0	21,500		10,900	10,600			
Subtotal	*475,900*	*54,500*	*421,400*	*48,102*	*37,660*	*61,455*	*72,160*	*65,190*	*136,833*
Replace electrical couplers on C-1 cars	1,900	0	1,900	1,900					
Install automatic recovery units	700	0	700	700					
Replace doors on A&B cars	4,688	4,688	0						
Upgrade wheel program	2,000	2,000	0						
Subtotal	*9,288*	*6,688*	*2,600*	*2,600*					
Category Total	485,188	61,188	424,000	50,702	37,660	61,455	72,160	65,190	136,833

** Vehicles to be used initially as replacements for cars out of service for rehabilitation. After completion of the A/B Car Rehab Program, these vehicles will be additions to the overall fleet to accomodate patronage growth.*

I-B. Mainline Rehabilitation

	Total	Funding	Funding	Fiscal Year Need					
	Cost	to date	Req't.	1996	1997	1998	1999	2000	2001-05
Priority 1									
Replace running rail & accessories	34,470	3,826	30,644		5,408		5,737		19,499
Rehabilitate subway ventilation fans	1,687	1,687	0						
Recoat steel tunnel liner rings	1,062	666	396				186		210
Repaint structural girders & bridges for corrosion protection	1,831	1,192	639		639				
Transbay Tube cathodic corrosion protection	4,562	3,324	1,238					1,238	
Replace sump pumps in subway tunnels	2,028	1,080	948		948				
Asbestos abatement (high priority)	839	0	839		839				
Subtotal	***46,479***	***11,775***	***34,704***	***0***	***7,833***	***0***	***5,923***	***1,238***	***19,710***
Priority 2									
Rehab traction power equipment	26,000	0	26,000	1,000	3,000	4,000	5,000	6,000	7,000
Replace BHT fan controller	200	200	0						
Replace R-O-W fencing and barbed wire	958	118	840		82	85	87	90	495
Repair Lake Merritt Channel subway structure	1,819	0	1,819		360.5	1,459			
Replace traction power house roofs	310	90	220		108	111			
Rehab insulation in transformer rectifiers	1,082	52	1,030		1,030				
Reinforce coverboard mountings	206	0	206		206				
Repair or replace cable pipe at M-80	2,063	0	2,063				82		1,981
Replace 1 KV flex jumpers	567	0	567		567				
Replace asbestos-containing arc chutes	618	0	618		618				
Widen I-80 undercrossing in Richmond (Caltrans req't.)	125	125	0						
Remove obstructions on emergency walkways	361	0	361		361				
TBT vents automatic power transfer	2,566	0	2,566		232	2,334			
TBT fan and damper control improvements	412	0	412		412				
Replace TBT lower gallery lighting fixtures	180	0	180		180				
Additional blue light safety stations	155	0	155		155				
Hazmat containment around power transformers	927	0	927		927				
Remove gaps in handrail along emergency walkways	283	0	283		283				
Replace surfaces at maintenance set-on points	754	0	754		180	186	191	197	
Asbestos abatement (moderate and low priority)	5,347	0	5,347			5,347			
Subtotal	***44,931***	***585***	***44,346***	***1,000***	***8,701***	***13,522***	***5,361***	***6,287***	***9,476***

Continued next page

I-B. Mainline Rehabilitation (continued)

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 3									
Replace diode with thyristor grounding at power substa.	2,016	0	2,016			2,016			
Repair structure damage in S.F. approach tunnel	927	0	927		927				
Retrofill traction pwr. transformer dielectric liquid	2,407	0	2,407		309	318	328	338	1,114
Replace contact rail (worn segments systemwide)	12,657	0	12,657		52			225	12,381
Replace contact rail (entire M-line)	20,600	0	20,600		20,600				
Replace C-line 34.5 KV cable	19,247	0	19,247		592	5,835	6,010		6,809
Repair or replace rectifiers and buss work	16,515	0	16,515		196	202	16,118		
Additional electrical insulation at various locations	159	0	159			159			
Motorize fire main valves in BHT	239	0	239			239			
Replace traction power control batteries	277	0	277		52	53	55	56	62
Subtotal	*75,044*	*0*	*75,044*	*0*	*22,727*	*8,821*	*22,510*	*619*	*20,366*
Priority 4									
Replace reclosers, potentials, transfer trip controls	1,471	0	1,471		31	297	350	360	433
Replace 1 KV disconnect switch enclosures,	118	0	118		118				
Dry standpipes at I-680 and Springbrook crossings	371	0	371			371			
Tunnel hose valve plan	159	0	159			159			
Relocate crossover at C53	7,649	0	7,649				7,649		
Subtotal	*9,769*	*0*	*9,769*	*0*	*149*	*828*	*7,999*	*360*	*433*
Category Total	176,223	12,360	163,863	1,000	39,411	23,170	41,792	8,504	49,985

I-C. Stations Rehabilitation

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 1									
Station security program	4,265	4,265	0						
Replace four Embarcadero Station escalators	2,867	2,867	0						
Rehabilitate station elevator valves & sills	510	510	0						
Repair concrete roof of Lake Merritt Station	356	356	0						
Repair platform sub-surface at six stations	462	462	0						
Replace raised and damaged concrete walks at sta.	1,050	0	1,050		103	106	109	113	619
Replace station signage	1,662	1,485	177			53			124
Replace sewage pumps in underground stations	469	0	469		124	127	219		
Repair stair tread edges and replace anti-slip treatments	584	275	309		309				
Replace platform edge tile	1,586	762	824		824				
Remove architectural barriers for accessibility	455	455	0						
Key Station (ADA) signage improvements	952	952	0						
Key Station (ADA) 12th Street elevator replacement	900	900	0						
Key Station (ADA) accessible AFC equipment	15,000	1,500	13,500		13,500				
Key Station (ADA) accessible parking improvements	391	0	391		391				
Replace AFC air dryers	314	0	314		155	159			
Replace Auto. Fare Coll. equip. (see also ADA AFC proj. above)	40,000	0	40,000		39,400	300	300		
Subtotal	***71,823***	***14,789***	***57,034***	***0***	***54,806***	***746***	***628***	***113***	***743***
Priority 2									
"Mint Station" program at four sta. per year	34,498	3,000	31,498		3,090	3,183	3,278	3,377	18,571
Energy conservation lighting retrofit in stations	22,849	1,850	20,999		2,060	2,122	2,185	2,251	12,381
Replace fire mains in three stations	250	250	0						
Replace four stations fire alarm systems (downtown SF)	350	350	0						
Modify change machines	850	0	850	850					
Replace station security gates	2,188	97	2,091		1,030	1,061			
Replace/rehab escalators and elevators systemwide	15,672	0	15,672	3,000	5,150	4,244	3,278		
Add'l. faregates at 12th, Embarc., Pl. Hill, El Cerrito	1,030	0	1,030		1,030				
Replace P.A. systems at all stations	846	0	846		103	743			
Replace roofing on stations	2,041	0	2,041			90	475	411	1,065
Replace ceiling in No. Berkeley Station	1,061	0	1,061			1,061			
Replace lentel structures on W. Oakland platforms	1,901	0	1,901			371	1,530		
Refurbish station agents' booths and consoles systemwide	8,633	0	8,633			1,591	1,639	1,688	3,714
Replace sta. agents' booth air conditioning systemwide	159	0	159		52	53	55		
Build staff breakrooms at seven stations	470	0	470		232	239			
Refurbish restrooms at all stations	1,050	0	1,050		103	106	109	113	619
Upgrade station emergency lighting	3,968	0	3,968		361	3,607			
Station stairway detection warning (E&H)	129	0	129		129				
Restore damaged/missing wall tile	420	0	420		41	42	44	45	248
Repair and repaint all painted surfaces	525	0	525		52	53	55	56	310
Resurface parking lots at stations as needed	2,908	0	2,908		541	265	273	281	1,548
Restore worn floor tile and brick	315	0	315		31	32	33	34	186
Restore platform canopies and windscreens	470	0	470		258	212			
Replace AC and Muni transfer machines	650	0	650	650					
Subtotal	***103,232***	***5,547***	***97,685***	***4,500***	***14,260***	***19,075***	***12,954***	***8,256***	***38,640***

** Does not include new AFC equipment funded in extensions budgets.*

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I-C. Stations Rehabilitation (continued)

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 3									
Replace station bike lockers	1,038	419	619						619
Replace locks at all stations	354	0	354		36	37	71	73	136
Replace station parking lot signs	306	0	306		36	37	38	39	155
Refurbish irrigation systems at landscaped sta.	525	0	525		52	53	55	56	310
Refurbish landscape and hardscape at stations	525	0	525		52	53	55	56	310
Refurbish/replace pigeon netting	525	0	525		52	53	55	56	310
Subtotal	*3,272*	*419*	*2,853*	*0*	*227*	*233*	*273*	*281*	*1,839*
Category Total	178,327	20,755	157,572	4,500	69,292	20,054	13,855	8,650	41,221

I-D. Controls & Communications Rehabilitation

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 1									
Next generation control system essential *	14,405	11,185	3,220	3,220					
Replace radio network * ***	40,000	40,000	0						
Advanced automatic train control **	64,700	28,200	36,500	3,300	33,200				
Replace Tektronix consoles in Central *	1,240	1,240	0						
Replace Maint. Vehicle Detection Devices *	100	0	100	100					
Replace SORS systemwide	2,575	0	2,575		2,575				
Subtotal	***123,020***	***80,625***	***42,395***	***6,620***	***35,775***	***0***	***0***	***0***	***0***
Priority 2									
Rehab wayside train control equipment	27,000	0	27,000	1,000	3,000	5,000	5,000	5,000	8,000
Next generation control (destination sign replacement)	5,747	0	5,747	2,110	2,173	1,464			
Portable radios for station agents ***	120	120	0						
Portable radios for maintenance personnel ***	120	120	0						
Replace Digital Transmission System	4,020	0	4,020		1,442	1,485	1,093		
Replace tower console IC, radio switch matrix & PA systems	41	0	41		41				
Replace yard cable plant	522	0	522		129	133	137	124	
Replace cable plant (excl. T1) systemwide	463	0	463		52	53	55	56	248
Replace wayside cable plant splice boxes syswide	129	0	129		129				
Yard tower data network	670	0	670		670				
Replace yard voice recorders	258	0	258		258				
Reverse running in Transbay Tube	130	130	0						
Comspec position in Central	267	195	72		72				
Replace MARIS (MIS) software	1,622	1,210	412		412				
Upgrade MIS mainframe computer	5,333	0	5,333	1,000					4,333
Subtotal	***46,441***	***1,775***	***44,666***	***4,110***	***8,377***	***8,135***	***6,284***	***5,180***	***12,581***
Priority 3									
Replace CATV and CCTV systemwide	*302*	*0*	*302*		*72*	*74*	*76*	*79*	
Priority 4									
Replace T1 cable systemwide ***	*8,000*	*8,000*	*0*						
Category Total	**177,763**	**90,400**	**87,363**	**10,730**	**44,224**	**8,209**	**6,360**	**5,259**	**12,581**

** Does not include portions funded in extensions budgets.*

*** Preliminary estimate--actual cost to be determinined based on funding strategy: If AATC is not implemented, then conventional resignaling needed on A-line.*

**** These four projects are planned to be included as parts of the Joint Development Telecommunications Project, otherwise will require funding.*

I-E. Shops & Yards Rehabilitation

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 1									
Non-stock inventory (repairable parts provisioning)	49,161	1,200	47,961	1,500	3,245	3,501	4,262	4,502	30,951
Replace Hayward truing machine	1,500	1,500	0						
New wheel truing machine	1,820	1,820	0						
Replace Hayward wheel press	550	550	0						
Hayward Shop rehab/equip. replacement	1,809	1,809	0						
Replace dust collector systems at Richmond & Concord	900	900	0						
Replace parts washing facilities in all shops	390	0	390	60	330				
Central receiving/distribution warehouse facility	6,350	0	6,350	6,350					
Replace rail and turnouts in East Bay yards	5,075	0	5,075		227	477	628	647	3,095
Subtotal	***67,554***	***7,779***	***59,775***	***7,910***	***3,801***	***3,978***	***4,890***	***5,149***	***34,047***
Priority 2									
Recondition overhead cranes (Hay, Rich, Conc, DC)	1,212	0	1,212			345	464		402
Replace roofing on shops, towers, etc.	4,402	0	4,402		515	955		703	2,229
Overhaul transit vehicle washers (Rich, Conc, Hay)	1,076	538	538		538				
Reconfigure transportation buildings	1,500	0	1,500		1,500				
Richmond oil/water separator tanks	197	197	0						
Yard fuel tanks	23	23	0						
Metro bldg. fuel tank	155	155	0						
Wheel/rail maintenance study	300	300	0						
Rich. Yard efficiency modifications	353	353	0						
Replace purchasing & inventory control system	567	0	567		567				
Subtotal	***9,783***	***1,566***	***8,217***	***0***	***3,119***	***1,300***	***464***	***703***	***2,631***
Priority 3									
Recondition shop sump pumps (Rich, Conc, Oak)	258	0	258		258				
Second wheel/axle press (location TBD)	1,545	0	1,545		1,545				
Paint and repair room	2,000	0	2,000		2,000				
Rehabilitate and reconfigure Oakland Shop	75,155	0	75,155		155				75,000
Additional tracks at Hayward Yard	103	0	103		103				
Subtotal	***79,060***	***0***	***79,060***	***0***	***4,060***	***0***	***0***	***0***	***75,000***

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I-E. Shops & Yards Rehabilitation (continued)

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 4									
Replace shop roll-up doors (Rich, Hay, Conc, Oak)	1,248	0	1,248		824	424			
Replace shop radiant heaters	206	0	206		206				
Resurface roads/parking and relamp shop/yard exterior lights	309	0	309		309				
Reconfigure/replace grease/oil facilities (Hay, Rich, Conc, DC)	155	0	155		155				
Repaint shop floors	515	0	515		515				
Replace yard disconnect enclosures	613	0	613		129	239	246		
Replace heating/cooling systems at East Bay shops	2,575	0	2,575		2,575				
Replace heating/cooling system at Lake Merritt Admin.	4,635	0	4,635		4,635				
Replace heating/cooling system at Cash Hdlg. Bldg.	515	0	515		515				
Richmond shop, yard & tower security improvements	1,359	0	1,359		670	690			
Subtotal	***12,130***	***0***	***12,130***	***0***	***10,532***	***1,353***	***246***	***0***	***0***
Priority 5									
Corrosion protection isolation of East Bay yard traction power	3,090	0	3,090		3,090				
Recondition restrooms and locker rooms all shops	157	0	157		77	80			
Storage area canopy, lighting and office at Richmond Shop	180	0	180		180				
Rehab all shop offices	186	0	186			186			
Subtotal	***3,613***	***0***	***3,613***	***0***	***3,348***	***265***	***0***	***0***	***0***
Category Total	172,140	9,345	162,795	7,910	24,859	6,896	5,600	5,853	111,678

I-F. Work Equipment

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 1									
Replace gasoline-powered maintenance equipment	*400*	*400*	*0*		*0*	*0*	*0*	*0*	*0*
Priority 2									
Barcode system for cash handling	612	612	0						
Office computers, LANs, WANs	2,950	0	2,950	275	300	100	200	225	1,850
Replace floor scrubber machines	100	100	0						
Curve rail analysis equipment	839	0	839		839				
Install Positron test rack	50	50	0						
Replace tolltest workstation	50	0	50		50				
Replace CC&R tools and test equipment	950	0	950	50	100	200	200	200	200
Replace RS&S tools and test equipment	500	0	500	25	25	50	175	25	200
Replace P&W tools and test equipment	1,625	0	1,625	25	400	100	100	100	900
Replace OA&FM tools and test equipment	250	0	250	25	25	25	25	25	125
Replace Transportation Dept. tools & equip't.	250	0	250	25	25	25	25	25	125
Replace forklifts	297	197	100			50			50
Replace police cars	2,750	0	2,750	150	400	150	400	150	1,500
Replace vans	1,620	0	1,620	300	90	170	270	170	620
Replace pick-ups	2,820	0	2,820	250	330	430	280	280	1,250
Replace armored tractor-trailer truck	630	0	630			130			500
Replace hi-rail crew trucks	1,630	0	1,630		380	250	250	250	500
Replace hi-rail dump truck (track & structures)	240	0	240		240				
Replace hi-rail fire trucks	700	0	700			350	350		
Replace hi-rail rerailing crane	450	0	450			450			
Replace hi-rail yard switchers	550	0	550		550				
Replace hi-rail wrecker	250	0	250			250			
Replace hi-rail multi-crane	300	0	300		300				
Replace boom truck (stinger)	100	0	100		100				
Replace hi-rail speed swing	200	0	200				200		
Replace backhoe/tractor	75	0	75			75			
Replace hi-rail vacuum truck	200	0	200						200
Replace dump truck (grounds)	50	0	50						50
Replace double bucket truck	80	0	80						80
Replace hi-rail under-bridge truck	450	0	450			450			
Replace flat-bed truck	50	0	50			50			
Replace lube truck	110	0	110					110	
Replace hi-rail welding trucks	410	0	410		140		270		
Replace trailer-mounted 635 KW generator	70	0	70						70
Replace portable pumps	30	0	30				15		15
Retrofit locomotives	600	0	600		300	300			
Replace rail grinder	1,200	0	1,200						1,200
Replace tamper liner	600	0	600			600			
Replace ballast regulator	180	0	180			180			
Replace curve rail analysis equipment	825	0	825		825				
Recondition geometry car	1,800	0	1,800					1,800	
Subtotal	*27,443*	*959*	*26,484*	*1,125*	*5,419*	*4,385*	*2,760*	*3,360*	*9,435*

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I-F. Work Equipment Replacement (continued)

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 3									
Replace electric maintenance carts and chargers	520	0	520		270			250	
Replace automotive lifts at all shops	380	0	380		310	70			
Replace air compressors at all shops	430	0	430		350		80		
Replace lathes and mills at Hayward and Oakland	210	0	210		210				
Replace machine shop equip. (Conc, Hay, Rich, D	50	0	50						50
Portable 3MW traction power substation	1,600	0	1,600		1,600				
Replace sedans	1,140	0	1,140		140	170	190	100	540
Replace forklift	60	0	60		60				
Replace trailer-mounted welder	40	0	40					20	20
Replace trailer-mounted compressor	70	0	70						70
Replace trailer-mounted 50 KW generator	40	0	40					40	
Replace portable 3 KW generators	15	0	15					15	
Replace heavy-duty trailer	60	0	60					60	
Replace light-duty trailer	30	0	30					30	
Equipment for technical training labs	400	0	400		200	200			
Subtotal	***5,045***	***0***	***5,045***	***0***	***3,140***	***440***	***270***	***515***	***680***
Priority 4									
Replace trailer-mounted chipper	25	0	25					25	
Replace bobcat small tractor	40	0	40						40
Replace steam cleaners (Hay, Conc, Rich, DC)	80	0	80		20	10	10		40
Subtotal	***145***	***0***	***145***	***0***	***20***	***10***	***10***	***25***	***80***
Priority 5									
Replace trash compactors	*300*	*0*	*300*	*0*	*230*	*0*	*70*	*0*	*0*
Category Total	33,333	1,359	31,974	1,125	8,809	4,835	3,110	3,900	10,195

II. Extensions

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need 1996	1997	1998	1999	2000	2001-05
Priority 1									
to East Dublin-Pleasanton	514,050	514,050	0						
West Dublin/Pleasanton station	28,000	0	28,000		28,000				
to West Pittsburg-Bay Point	505,742	505,742	0						
Pittsburg-Bay Point to Railroad Ave.	124,000	104,000	20,000				20,000		
to Warm Springs *	540,800	348,000	192,800						192,800
to Colma	170,179	170,179	0						
to San Francisco Airport **	1,269,000	86,622	1,182,378	1,182,378					
Oakland Airport Connector ***	137,124	1,124	136,000	5,000		131,000			
Commuter rail system ****	350,000	0	350,000		175,000	175,000			
Subtotal	***3,638,895***	***1,729,717***	***1,909,178***	***1,187,378***	***203,000***	***306,000***	***20,000***	***0***	***192,800***
Priority 2									
Other non-Phase 1 extension planning	**TBD**	3,295	**TBD**	TBD	TBD	TBD	TBD	TBD	TBD
Pittsburg-Antioch									
West Contra Costa									
Livermore									
San Francisco									
San Ramon Valley Corridor									
Santa Clara County									
Subtotal	***TBD***	***3,295***	***TBD***	*TBD*	*TBD*	*TBD*	*TBD*	*TBD*	*TBD*
Category Total	3,638,895	1,733,012	1,909,178	1,187,378	203,000	306,000	20,000	0	192,800

* *Warm Springs cost estimate prepared in 1990; subject to updating when a new project schedule is determined.*

** *Estimated cost of proposed project in current Locally Preferred Alternative; proposed funding plan includes $800M from FTA, $99M from Samtrans, $98M in state funds, $200M in a commitment from San Francisco, and $72M from other state and local sources.*

*** *BART and Port of Oakland would each contribute $500,000 local match if the project is selected by FTA for SLRT PE/EIS funding, and both agencies would also contribute to the local match for construction if approved by FTA for implementation.*

**** *Commuter Rail Program costs based on one-time capital cost and start-up cost of equipment and right-of-way.*

III. Seismic Retrofit Program

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 2									
Seismic rack anchors & vehicle support tiedowns	402	0	402		402				
Seismic restraints on overhead cranes	201	0	201		201				
Engine-generators for earthquake standby power #1	4,423	0	4,423		2,318	2,106			
Engine-generators for eqrthquake standby power #2	2,158	0	2,158		211	1,947			
Seismic structural evaluation of aerial structures	1,143	0	1,143		1,143				
Seismic retrofit of aerial structures	217,797	0	217,797			24,401	25,133	25,887	142,377
Seismic sensing system upgrade	2,493	0	2,493		2,493				
Gas valve automatic seismic shut-offs	170	0	170			170			
Retrofit Transbay Tube seismic joints	618	0	618		618				
Category Total	**229,404**	**0**	**229,404**	**0**	**7,385**	**28,623**	**25,133**	**25,887**	**142,377**

IV. Service Improvements

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need 1996	1997	1998	1999	2000	2001-05
Priority 2									
A-line traction power enhancements	20,693	0	20,693			2,122			18,571
M-line traction power enhancements	46,690	0	46,690			9,548			37,142
C-line traction power enhancements	6,365	0	6,365			6,365			
R-line traction power enhancements	22,104	0	22,104			15,914			6,190
Expand Hayward Shop	13,500	0	13,500				13,500		
Expand Concord Shop	8,500	0	8,500		8,500				
Subtotal	*117,852*	*0*	*117,852*	*0*	*8,500*	*33,949*	*13,500*	*0*	*61,903*
Priority 3									
Additional Capacity Enhancement Program *	2,000,000	0	2,000,000						2,000,000
Add new bike lockers	178	178	0						
El Cerrito Plaza parking expansion	5,500	5,500	0						
Hayward transit center	1,142	1,142	0						
BayFair transit center	1,007	1,007	0						
Concord transit center	2,318	2,318	0						
Walnut Creek transit center	2,930	2,930	0						
Daly City transit center	6,650	6,650	0						
Pl. Hill park/ride for I-680/24 mitigation	977	689	288		140	148			
West Oakland access and station area improvements	TBD	0	TBD						
Fruitvale access and station area improvments	TBD	0	TBD						
Union City access and station area improvements	TBD	0	TBD						
Rockridge access and station area improvements	TBD	0	TBD						
El Cerrito Plaza transit center (AC Transit funding)	335	0	335		335				
Richmond transit center (AC Transit funding)	625	0	625		625				
Fruitvale transit center (AC Transit funding)	2,675	0	2,675			2,675			
Fremont transit center (AC Transit funding)	3,337	0	3,337			3,337			
South Hayward transit center (AC Transit funding)	1,280	0	1,280			1,280			
Coliseum transit center (AC Transit funding)	732	0	732				732		
Union City transit center (AC Transit funding)	3,054	0	3,054				3,054		
West Oakland transit center (AC Transit funding)	207	0	207					207	
New administrative headquarters building	60,000	0	60,000		30,000	30,000			
Subtotal	*2,092,947*	*20,414*	*2,072,533*	*0*	*31,100*	*37,440*	*3,786*	*207*	*2,000,000*
Priority 4									
Station entrance canopies	*32,556*	*0*	*32,556*	*0*	*0*	*0*	*6,556*	*0*	*25,999*
Category Total	2,243,354	20,414	2,222,940	0	39,600	71,389	23,842	207	2,087,902

** Includes additional revenue vehicles; additional traction power and train control rehabilitation and upgrades; other reliability improvements; improved station circulation and access; and further expansion of maintenance shop and storage yard facilities, in order to support an increase in daily patronage from approximately 361,000 under the currently projected growth plan, to 500,000 under an "Expanded Capacity Enhancement" program.*

V. Research, Development and Demonstration

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 2									
Electric Station Cars demonstration	1,441	1,441	0						
Electric vehicle charging kiosk demonstration	1,100	1,100	0						
Sound mitigation/noise reduction program	TBD	350	TBD						
Superconducting Magnetic Energy Storage	TBD	350	TBD						
Adaptive diagnostic systems	TBD	75	TBD						
Traction power optimization	TBD	0	TBD						
Joint Development Entrepreneurial Study	250	250	0						
Other	TBD	0	TBD						
Category Total	TBD	3,566	TBD	TBD	TBD	TBD	TBD	TBD	TBD

System Rehabilitation Program

The projects and costs associated with the BART System Rehabilitation Program are generated from replacement cycles based on the useful life of the various components of the physical plant.

Rolling Stock Rehabilitation

A&B Car Rehabilitation

The rehabilitation of the District's original fleet of A and B Cars is essential to enable the District to continue to provide for current and future service demand levels. The District has one of the oldest average fleet ages in the transit industry. The A and B Cars will be 25 years old prior to rehabilitation and have never been overhauled. The rehabilitation will replace worn out and obsolete components and return the vehicles to their original design specifications. Systems to be replaced or rebuilt include electrical, suspension, braking, coupling, heating and cooling, upholstery and carpeting. The rehabilitation is intended to add twenty years of service life to the cars, improve their reliability, and bring them into compliance with the requirements of the Americans With Disabilities Act (ADA). The cost of remanufacturing vehicles is estimated at approximately 50 percent of new car cost. This project is programmed for funding from Section 3, STP/CMAQ fund, Proposition 108, TCI, Bridge Tolls, and BART funds.

Replace Electrical Couplers on C-1 Cars

The existing "pin-type" inter-car electrical couplers on BART cars are very high maintenance items. Conversion to "button-type" couplers will reduce maintenance requirements and car out-of-service time. A and B cars will be converted as part of the whole car rehabilitation program, and the new C-2 cars will come equipped with button couplers. This project for the C-1 cars will ensure fleet compatibility, and will be funded by BART.

Installation of Automatic Train Control Restoration Units

Failure of the on-board vehicle automatic train control system is one of the major causes of service disruption. This project is a retrofit of the existing systems, which will provide two valuable functions. First, the new units will dramatically increase the speed with which recovery from such failures can be accomplished, thereby putting temporarily disabled on-line trains back in service much faster. Second, the new systems will capture and record critical information about failures, improving the efficiency of maintenance. This project will be funded by BART.

Replacement of A&B Car Door Components

Malfunctions of the door systems on A&B cars is a major factor in service disruptions, and needs to be addressed earlier than can be accomplished through the whole car rehabilitation program. One early identified problem was expansion of the foam comprising the door core, which then delaminated the door structures and caused jams. A federal grant has been secured to replace the doors and thresholds. More recently it has become apparent the door suspension rails are also contributing to door failures. The rails are becoming corroded, adding to the door jam problem. This project is funded with Section 3 and BART funds and is currently underway.

Wheel Upgrade Program

Following the train derailment of December 1992, BART undertook an analysis of wheel and rail maintenance standards. This analysis resulted in the upgrade of those standards. This BART-funded project, currently underway, will bring all of the wheels in the fleet up to the new standards.

Mainline Rehabilitation

The purpose of this program of projects is to replace and rehabilitate those components and subsystems of BART's mainline which have deteriorated, or will in the next decade, due to age and use. Many components of the trackway and traction power systems are over 21 years old, are failing with increased frequency and must be reconditioned or replaced. Mainline rehabilitation will prevent rail and traction power failures which would cause disruption and delays to revenue service. The highest priority Mainline Rehabilitation projects include:

Replace Running Rail and Accessories

This project will replace curve-worn rail and switch components in high density train traffic areas. Due to the rail wear caused by the wheel-rail interface, rail and switch components in high usage areas require changeout on a three to five year cycle. The current two-year cycle is funded with Section 9, and is underway.

Rehabilitate Subway Ventilation Line Fans

This project will replace all ventilation fan blades in tunnels and subways throughout the system. This work is required to upgrade the ventilation fans that are used for emergency evacuation and for maintenance crews performing maintenance. In the past, failures of fans have been experienced due to cracks that developed in the blades, causing the blades to fail. An engineering analysis was made of all ventilation fans throughout the system and it was found that the blades require replacement. This project is funded with Section 9, and is underway.

Recoat Tunnel Liner Rings and Structural Girders for Corrosion Protection

The steel rings that line BART tunnels must be undergo heavy maintenance periodically, including removal of corrosion encrustation, sandblasting, and application of corrosion-resistant coating. The BART aerial structural girders and bridges have not undergone a complete rehabilitative repainting since their construction in the 1960's and early 1970's. This work is becoming essential in order to avoid corrosion and consequent structural deterioration and weakness. These projects are essential to keep the system safe and reliable.

Transbay Tube Cathodic Corrosion Protection

The steel outer skin of the Transbay Tube is protected from saltwater corrosion through the use of anodes which attract the forces of corrosion and are consumed in the process. These anodes must be replaced on a cycle of about every ten years. The current replacement cycle is funded with STP funds, and is underway.

Replace Sump Pumps in Subway Tunnels

The sump pumps which keep BART subway tunnels dry are over 20 years old and are becoming unreliable and expensive to maintain. The ability to pump water out of tunnels is critical to keep the system safe and reliable.

Asbestos Abatement

The 1989 Loma Prieta earthquake disrupted asbestos insulation in train control electronics rooms at various location around the District. These rooms can now be entered by maintenance personnel only when fully suited up for potential asbestos exposure, making such maintenance much more difficult, time-consuming, and expensive. The District anticipates receiving federal and state emergency assistance funding to correct this problem.

Right-of-Way Fencing

Wherever BART tracks run on the surface at grade, the length of the right-of-way is fenced to prevent unauthorized and unsafe access to the trackway. This fencing must be replaced periodically due to normal deterioration or due to vandalism. This is a critical safety item.

Replace Traction Power House Roofs

Six traction power substations have been identified as being in critical need of repair. The roofs are constructed of steel decking and in some case, have rusted completely through. Water incursion into substations can result in traction power failures and serious service disruption.

Reinforce Third Rail Coverboard Mountings

The traction power (or "third") rail is protected from exposure by a coverboard mounted above it. Over time, the mountings have deteriorated, allowing the coverboard to work loose. This poses a hazard in that a loose coverboard can come into contact with the power collection "paddle" that extends from the train cars. Such a collision can shear off collection paddles and/or a section of coverboard.. Either occurrence can result is a major service disruption and possible hazardous situation.

Replace 1000-Volt Flex Jumpers

The primary traction power distribution cables are joined to the third rail by means of flexible jumper cables. These jumpers are flexible and allowed to move to accommodate vibration and expansion of the rail due to thermal fluctuations. The jumpers are exposed to weather, ultra-violet radiation, and abrasion. Many of these cables have become worn to where they are subject to failure. Such failure can result in loss of power to trains, meaning service disruption, and well as localized electrical arcing and potential fire hazard.

Replace Asbestos-Containing Arc Chutes

The traction power distribution system includes 1000 volt circuit breakers which cycle open and closed. The action of these breakers creates sizable electrical arcs which must be contained and extinguished, which is accomplished with "arc chutes". The existing chutes are lined with asbestos as insulation, which creates a potential exposure hazard to maintenance personnel.

Replace Berkeley Hill Tunnel Fan Controller

This project will replace the aging controller on the ventilation/smoke exhaust fans in the Berkeley Hills Tunnel. The new controller will be fault-tolerant and have programmable logic to provide greater reliability and flexibility of operation.

Widen I-80 Overcrossing

Caltrans has purchased right-of-way from BART in conjunction with the I-80 widening project, the proceeds from which BART will use to accommodate a wider overcrossing, also in conjunction with the freeway project.

Traction Power Rehabilitation

This is a long-term program to rehabilitate a wide range of traction power components and subsystems as these items continue to age and deteriorate, leading to lower reliability and higher potential for service disruption. Individual items will include reconditioning of rectifiers and replacement of grounding systems, dielectric liquids in power transformers, traction power control batteries, switch enclosures, and gas-pressure cable pipes.

Mainline Rehabilitation also includes the following representative projects:

- Repair of damaged portions of subway tunnel under the Lake Merritt Channel.
- Repair of damage in San Francisco approach tunnel

- Replacement of contact rail (third rail for traction power).
- Replace surfaces at right-of-way maintenance set-on points

Stations Rehabilitation

The purpose of this program of projects is to improve the customer experience in stations by rehabilitating or replacing equipment that is worn, unreliable, obsolete, or no longer economical to clean or repair. The highest priority Stations Rehabilitation projects include:

Station Security Program

This project will increase the illumination levels of surface parking lots, add emergency police callboxes in parking lots, improve police radio communications in multi-level parking structures, and provide decentralized headquarters structures to accommodate community-based deployment of BART police forces. This project is funded with BART funds, and is underway.

Replace Four Embarcadero Station Escalators

This project will replace four modular escalator platform units at the Embarcadero Station. These escalators have high failure rates and are costly to repair in both time and material due to their special design. When a platform unit is out of service, it creates a potential safety concern due to crowding on the platform. This project is funded with Section 9, and is underway.

Rehabilitate Station Elevator Valves and Sills

This project will rehabilitate station elevators which have been in service for over 21 years. This project is necessary to make the elevators more reliable and safe. Due to the age of the elevators, trouble calls are increasing and equipment is out of service for longer intervals causing inconvenience to passengers, especially the elderly and mobility-impaired. This project is funded with Section 9, and is underway.

Repair Concrete Roof of Lake Merritt Station

This project will repair the structurally deteriorated concrete roof and replace waterproofing over a portion of the mezzanine level of the Lake Merritt Station under Oak Street. The damaged concrete roof has caused water leakage in the south stairway area making it necessary to close that stairway whenever it rains. The water intrusion will also corrode the reinforcing steel in the concrete roof causing further structural deterioration. Implementation of this repair work will restore the structural integrity of the concrete roof and provide safe and uninterrupted patron access between mezzanine and platform levels.

Repair Platform Sub-Surfaces at Various Stations

Platform edge sub-surfaces are deteriorating at several stations, causing the platform edge detection tiles to begin to lift and create a tripping hazard for patrons. Repairs are required constantly and are very labor intensive. Funding is required to reconstruct the sub-surfaces to allow a stronger bond for the tiles. This will eliminate both the lifting problem and the tripping hazard to patrons.

Replace Raised and Damaged Concrete Walks at Stations

This project will replace concrete walkways around all stations that have been raised and damaged by growing tree roots. This situation causes tripping hazards.

Replace Maps and Signs in Stations

This project will update and replace the current porcelain enameled maps and transit information displays in all BART stations. The replacement is required to reflect the new extension stations and to update current local transit information. This project will provide a graphic display system that is more flexible and more easily updated than the current maps which have not been updated since they were originally installed in 1972.

Replace Station Roofing

The roofs of stations and weather protection canopies deteriorate with age and exposure to the elements. In order to protect patrons from slipping hazards, protect equipment and furnishings, and avoid structural damage, roofing must be replaced on a periodic basis.

Replace Sewage Pumps in Underground Stations

Sewage from bathrooms in underground stations must be pumped up into the city sanitary sewer collection system. The existing pumps have been in place since the BART system opened. They are becoming increasingly unreliable and uneconomic to maintain. These pumps must be functional as a matter of patron convenience and public health.

Anti-Slip Treatment on Station Stairs

The anti-slip treatment originally applied to help protect patrons from slipping and falling on station stairs has worn away in many locations throughout the District. This treatment must be renewed in order to protect the safety of those who use the stairs, especially during wet weather.

Replace Platform Edge Detection Tiles

The existing platform edge tiles, intended to provide a visual and tactile warning of the adjacent drop-off into the trackway pit, have been worn heavily due to normal foot traffic at many stations. They need to be replaced to remain functional.

Key Station (ADA) Accessibility Improvements

These projects will provide federally-mandated accessibility modifications to 20 Key Stations. They are designed to improve the accessibility of the existing stations for disabled persons by providing new accessible route information and signs, modifying the street elevator at the 12th Street Station, removing barriers that are potential safety hazards, and meeting standards for the supply of accessible car and van parking. This project is needed to comply with Americans With Disabilities Act (ADA) requirements and to improve passenger safety. Parts of this program of projects are funded with Section 9, and are underway. Additional Section 9 funding is has been programmed to complete the projects.

Accessible AFC Equipment (ADA compliance)

This project will provide a new accessible fare vendor, faregate and addfare machine for each Key Station. It will also provide modifications to credit/debit vendor equipment to make it accessible and in compliant with the ADA requirements. This project is programmed for Section 9 funding.

Replace Automatic Fare Collection Equipment Air Dryers

The faregate barriers are driven by compressed air, which in turn must be dehumidified through use of a refrigerant. Air quality regulations that go into effect in 1995 will ban the use of the CFC refrigerant used in the existing dryers. The existing dryers cannot be modified to use the newly-developed types of refrigerants, and the replacement AFC equipment will not be in place for several years, so the existing dryers must be changed as an interim measure.

Replace Automatic Fare Collection Equipment

This project will replace all faregates, ticket vendors and addfares throughout the AFC system in the 34 existing stations. The project needs to be done to: decrease revenue collection and maintenance costs through use of more modern servicing modules; increase revenue security and accountability through use of sealed coin and bill units; implement an upgraded Data Acquisition System; and increase equipment availability for customers through greater reliability and maintainability. The urgency of the project is driven by the need to capture maintenance and security benefits, while avoiding deterioration of customer service levels as existing equipment approaches the end of its useful service life. The ticket vendor portions of this project is expected to receive Section 9 funding. BART and MTC are jointly exploring options for funding the faregate portion of the project, in order to ensure regional compatibility with the multi-operator Translink "universal" ticket program.

Replace Station Security Gates

The first part of this project will replace heavy usage security gates that are in the worst condition after being in service for over 21 years---a subsequent project would replace those gates that are worn but not yet in critical condition. The maintenance department is repairing failures in these gates on a daily basis. In addition, gate parts for repairs are difficult to obtain as the gates have become obsolete. When gates fail and parts are not available to make repairs, they are out of service for long periods of time and in some cases the situation requires additional security measures to protect the station. This project will also convert some manually-operated security gates at stations to motorized gates.

Replace and Rehabilitate Escalators and Elevators

The escalators and elevators throughout the system are the original installations (four of the escalators at Embarcadero Station are currently being replaced). These units carry extraordinarily heavy loads, particularly in the various downtown subway stations. After more than 20 years of use and wear-and-tear, they are becoming unreliable, a major source of patron dissatisfaction, and uneconomical to maintain and repair on a routine basis. Almost all of the units need a complete reconditioning, and several of the most unreliable need to be replaced.

Reinforce Escalator Side Plates

This project will retrofit all escalators, except those to be replaced, by reinforcing the side plates (baseboards) at the edge of steps, to prevent side plate deflection caused by foot contact by patrons and by debris. This will minimize the possibility of causing accidents, and prevent debris from entering the drive mechanism and putting the unit out of service.

Refurbish and Install In-Storage Faregate Units

The District has 30 faregate units in long-term storage, which would be refurbished and installed at various locations where exit faregate queuing problems occur.

Replace/ Recondition Station Public Address Systems

This project would recondition or replace, as warranted, public address systems at those stations where the volume and/or voice quality of the existing installation has deteriorated to the point of not being able to provide an acceptable level of information to patrons.

Replace/Recondition Station Agent Consoles

The electronics in the station agent consoles are still the original installations. Most of these electronics are obsolete and no longer supported by manufacturers, making the maintenance of these increasingly unreliable units time-consuming and excessively expensive.

Replace Fire Mains At Three Stations

The water mains that supply firefighting water to three stations in southern Alameda County have been found unable to maintain the high pressure levels required in periodic testing. These mains are being replaced.

Replace Fire Alarms At Four Stations

The fire alarm systems at the four downtown San Francisco stations are obsolete and difficult to maintain. They are being replaced.

Replace Bike Lockers

The bicycle storage lockers at stations have deteriorated to the point of not providing an acceptable level of security and weather protection, and are being replaced.

Replace Air Conditioning Units In Station Agent Booths

The small air conditioning units used to cool station agents' booths are at the end of their design lifetimes, and must be replaced.

Stations Rehabilitation also includes the following representative projects:

- Replace bus transfer machines.
- Replace obsolete station lighting systems.
- Refurbish landscaping and irrigation systems.
- Restore weather projection canopies and windscreens
- Resurface parking lot surfaces
- Refurbish restrooms
- Restore missing and damaged wall tile
- Restore worn brick and tile flooring

Controls & Communications Rehabilitation

The purpose of this program of projects is to rehabilitate BART's controls and communications systems, including replacement of deteriorated and obsolete components and subsystems. The highest priority Controls & Communications Rehabilitation projects include:

NXTGEN Program

This project will replace obsolete on-line operational computer control systems. The systems included in this budget are the Destination Sign System (DSS) software, the Data Acquisition System (DAS), the Train Information Monitor System (TIM), and the Central Computer System (CCS). This project is needed to replace the 21-plus year old computers running the DAS and DSS systems and the 11-year old CCS computers. The NXTGEN program is scheduled to be completed in time to meet computer system requirements for the start-up of the extensions projects. This multi-year project is being funded annually with BART funds, and is well underway.

Replace Radio Network

This project will design, furnish, and install a systemwide multi-frequency, trunked radio network to replace the equipment used by train operations, station operations, BART Police, and maintenance forces. The current radio system has significant shortcomings, both in terms of capacity and reliability, which have frequent negative operational impacts and occasionally affect safety. BART has already been assigned broadcast frequencies, which are increasingly difficult to obtain. Federal radio regulations require that BART put these new frequencies into service within a few years or forfeit them to other users. This project is being implemented through an innovative joint development program with private sector financing.

Advanced Automatic Train Control

This project will install an advanced train control technology which will enable the BART system to nearly double its train carrying capacity. This project would allow system throughput to increase from the current 17 trains per hour up to 30 trains per hour. The system will be one which can be installed over the existing control equipment with relative ease and no service disruptions. The project will help BART to meet the increased demands on the system as headway reductions become necessary in the future. Defense conversion funding has been secured for the first phases of the project, which involve technology development and field testing. This project is underway.

Replace Workstation Consoles in Central Control

This project will replace existing Central Control workstations that are obsolete and cannot be expanded. In addition, the extensions budgets will provide for an increase in the number of work stations overall. This project provides the display hardware, local area network (LAN) interface equipment, software, installation and testing to make the units fully functional in BART's Central Control facility. This project is underway using BART funds.

Replace Maintenance Vehicle Detection Devices

This project replaces the maintenance vehicle detection devices used in specialized high-rail maintenance vehicles. These vehicle detection devices are required to allow Central Control to observe the location of on-track maintenance vehicles. This detection system serves as a safety device to prevent trains from entering into the work area where a maintenance vehicle is occupying mainline track. The units presently being used have been in service over 21 years and failure rates are increasing. When a failure occurs, the high-rail maintenance vehicle must be removed from mainline track, per PUC requirements, resulting in non-productive time in maintenance work schedules requiring single tracking.

Emergency Operations Center Equipment

An Emergency Operations Control Center is being established to coordinate, manage and provide mitigation planning for serious emergencies. This project will provide the basic equipment necessary to operate the center.

Wayside Train Control Rehabilitation

This is a long-term program to replace vital wayside train control components and subsystems which are becoming unreliable due to age and difficult to maintain due to obsolescence. Most of these components are no longer being produced and are no longer supported by manufacturers. If this work is not completed in a timely manner, essential train control hardware failures will lead to extensive disruption of service.

Replace Sequential Occupancy Release System

SORS is a Public Utilities Commission required back-up safety system to ensure that on-line trains maintain a safe separation distance in the event of any malfunction or failure of the vital train control system. The primary SORS computer is over 21 years old, is obsolescent, and becoming difficult to maintain. This safety critical system must remain operational and reliable.

Replace T-1 Cable

The T-1 cable is the primary data transmission cable that runs throughout the BART right-of-way, and links the entire system together. It will be replaced as part of the radio network/telecommunications project.

Recondition and Replace MIS Computer

The District's MIS mainframe computer will need to be upgraded in FY1996 to accommodate increased demand for administrative computing power. The entire unit will need to be replaced several years later, as it will ultimately become obsolete.

Replace Yard Voice Recorders

Located in each train storage and dispatch yard are multi-channel voice recorders which record all communications regarding train movements. This information can be critical in determining exactly what occurred in the event of any sort of accident involving trains in the yards. The existing units are becoming unreliable and hard to maintain.

Reverse Running In Transbay Tube

Existing train control electronics currently restrict reverse running in the Transbay Tube to one train at a time. Reverse running is a critically important function for recovering quickly from service disruptions in the Tube. This modification will provide the necessary signaling to allow up to three trains simultaneously in the Tube.

Second Communications Specialist Position In Central Control

As the extensions become operational and the number of trains on-line increases, it will become necessary to have a second position from which BART communications specialists can make essential announcements about train movements, service disruptions, special conditions and other events that affect patrons.

Controls & Communications Rehabilitation also includes the following representative projects:

- Replace the deteriorating train destination signs on station platforms.
- Replace the Digital Transmission System.

Shop & Yards Rehabilitation

The purpose of this program of projects is to address the deterioration of the shops and yards due to more than two decades of continuous use and age, and to provide adequate facilities to store and maintain a growing fleet of revenue vehicles. These projects will improve passenger transit service by improving revenue vehicle reliability through better maintenance, and by reducing vehicle out-of-service time and keeping as many vehicles in service as possible, thereby reducing train crowding; make the shops and yards safer places in which to work; provide cost savings to the District by reducing maintenance turn-around time and eliminating travel time to and from vendors; and improve the efficiency of the shops and yards by providing employees with dependable equipment needed to perform their duties effectively. The highest priority Shops & Yards Rehabilitation projects include:

Non-Stock Inventory (repairable parts provisioning)

The intent of the program is to maintain adequate inventory of all repairable parts in support of all transit vehicles, station and field equipment, and AFC equipment. Failure to provide for these requirements could lead to vehicles out-of-service and potential disruption to normal maintenance and service operations. This on-going need must be funded with District funds annually.

Replace Wheel Truing Machine

This project replaces a 21 year old wheel truing machine in the Hayward Shop. The new, more reliable and higher capacity truing machine will allow the District to go to a higher standard of preventive maintenance for wheel profiles and will result in increased productivity and lower load factors since fewer cars will be held out-of-service waiting for wheel re-profiling. This project is funded with BART funds and is underway.

New Wheel Truing Machine

The new truing machine at the Richmond Shop will accommodate the increased fleet size associated with operation of the extensions and additional vehicles for patronage growth in the future. It will also help the District to go to a higher standard of preventive maintenance for wheel profiles and will result in increased productivity and lower load factors since fewer cars will be held out-of-service waiting for wheel re-profiling. This project is funded with BART funds and is underway.

Replace Wheel Press

This project replaces the one existing wheel/axle press with a higher capacity press. This is necessary in order to keep up with the demand for rebuilt axle assemblies and to ensure that axle assemblies can be maintained for the growing vehicle fleet. This project is funded with Section 9 and is underway.

Hayward Shop Rehab/Equipment Replacement

This project will rehabilitate the shop and replace maintenance equipment to support BART's growing fleet. This upgrade is necessary to keep up with increased demand, will result in increased productivity, and will reduce the time cars will be held out of service for repairs in the future. This project is funded with Section 9 and is underway.

Replace Dust Collector Systems at the Richmond & Concord Shops

This project will bring the Richmond and Concord blow pit ventilation systems into compliance with CalOSHA regulations regarding employee exposure to airborne contaminates. This project is funded with Section 9 funds and is underway.

Replace Parts Washing Facilities in All Shops

This project replaces parts-washing facilities in all shops so the District will comply with environmental requirements. Parts-washing waste water needs to be specially handled to meet environmental discharge laws. The District will be subject to citations and a possible shutdown of facilities if found not to be in compliance.

Central Receiving and Distribution Warehouse Facility

The District will face increased need for inventory of materials as the new system extension come on-line, as the size of the operating fleet increases, and as parts must be stocked for A and B cars as configured both before and after rehabilitation. A new central receiving and distribution warehouse facility will meet those needs.

Replace Rail on Turnouts in East Bay Yards

This program will replace worn 90 pound rail, switch points and stock rails in yard throats. The 90 pound rail section is no longer used in the railroad industry and is very difficult to procure. In order to maintain rail and switch components in yards at a level to reduce the chance of derailment and support revenue service, it will be necessary to upgrade 90 pound rail and switch components to 119 pound rail section in heavy usage switching areas. The supply of 90 pound rail is being depleted and once this occurs, rail maintenance schedules will not be met, interfering with yard operations.

Recondition Shop Cranes

The existing heavy maintenance cranes located in the East Bay shops are still the original installations. Safe operation of these lift units must be assured through periodic reconditioning.

Replace Roofing On Shops and Towers

The roofs of the shops and towers protect personnel and equipment from exposure to the elements. These roofs must be replace periodically as the deteriorate due to age and exposure.

Overhaul Transit Vehicle Washers

The facilities used to wash the exterior of transit vehicles are still the original installations. They are becoming increasingly inefficient, and do not comply with current standards for containment and treatment of chemical-laden waste water. This project will bring the washers back up to design specifications and provide acceptable control of waste.

Reconfigure and Rehabilitate Transportation Buildings

These buildings at the train dispatch yards provide the essential administrative facilities for on-site train operations, as well as lunch/breakrooms, locker rooms, and other support facilities for on-duty train operators. The current configuration of these buildings is inadequate to serve the increased number of operators required to operate higher levels of service associated with the new system extensions.

Richmond Oil/Water Separator Tanks At Richmond Yard

The underground oil/water separators in currently in service at Richmond Yard are corroded and leaking. The City of Richmond is requiring BART to replace these units with new double-walled separators or face a cut-off of access to effluent discharge facilities. This would shut down operation of the transit vehicle washer.

Yard Fuel Tanks

This project will install 500-gallon above-ground gasoline tanks and dispensing units at the Richmond and Hayward yards. This is an efficiency improvement which will eliminate to the need to bring maintenance vehicles from these outlying yards all the way into the Oakland Yard, as is now the case, to refuel.

MetroCenter Building Fuel Tank

The 4,000 gallon fuel tank located in the parking lot of the MetroCenter Building, which provides fuel for the emergency generator located on the roof of that building, is no longer in compliance with regulations for underground fuel storage. BART has been ordered by Alameda County to replace the tank.

Wheel/Rail Maintenance Study

This study was mandated by the Public Utilities Commission as a result of its investigation into the December 1992 derailment in the Oakland Wye. Rail transit experts will review the District's maintenance procedures as to its affect on the wheel/rail interface.

Yard Efficiency Improvements
This project will reconfigure trackwork at the Richmond Shop to improve staging and routing of cars to the new wheel truing machine to be installed there.

Shops & Yards Rehabilitation also includes these other representative projects:

- Add a second wheel/axle press at the Hayward Shop.
- Replace shop sump pumps
- Replace the shop roll-up doors
- Improve security at the Richmond Yard complex
- Resurface, restripe and relamp shop parking lots and access roads at the East Bay shops and yards.

Work Equipment

The purpose of this program is to replace worn and obsolete maintenance and service vehicles and maintenance equipment. This equipment includes such items as tools, power generator sets, light towers, grounds and buildings maintenance equipment, shop equipment, test instruments, light-duty highway vehicles, BART police and personnel sedans, and heavy-duty maintenance vehicles (diesel trucks, tractors, and track maintenance vehicles).

BART's maintenance equipment gradually becomes worn from use. Eventually it becomes more economical to replace the old equipment rather than repair it. The ongoing equipment replacement program assures that old, worn out equipment is replaced in a timely manner to minimize overall costs and ensure personnel safety. If this equipment is not replaced, overall costs will increase, maintenance crews will be disrupted by failed equipment, and service to patrons will deteriorate. The highest priority Work Equipment Replacement project is the replacement of gasoline-powered maintenance equipment used in subways with electrically-powered equipment, as required by CalOSHA tunnel safety orders.

Extensions Program

Phase 1 Extensions

The purpose of the Phase 1 Extensions Program is to expand the BART rail system to areas not yet directly served by rail but where extension commitments have been made. The areas include eastern Contra Costa and Alameda Counties, southern Alameda County, and northern San Mateo County. This program includes project planning and environmental review; property acquisition; design and construction of fixed facilities; design, procurement and installation of systems elements; and the purchase of vehicles.

Castro Valley and East Dublin/Pleasanton

The Dublin/Pleasanton project is a 13.8 mile double track extension to the original BART system. It begins with a connection to the existing Fremont BART line just south of the Bay Fair Station in San Leandro and continues eastward in the median of the I-238 and I-580 freeways to the end of the project in the Dublin/Pleasanton area. There will ultimately be three stations along the extension: one in Castro Valley located at I-580 and Redwood Road; a second station at West Dublin/Pleasanton near Stoneridge; and the third one at East Dublin/Pleasanton (at the Dougherty Overhead) near Hacienda Business Park. This project is under construction. Funding for the West Dublin/Pleasanton Station has not yet been secured.

North Concord and Pittsburg-Bay Point

The North Concord/Pittsburg-Bay Point project is 7.8 miles of double track and will have two stations. It will run north from the existing Concord Station to a new North Concord/Martinez Station and then east along Route 4 to a West Pittsburg Station. Additionally, improvements will be made to the existing Concord Yard to increase operating efficiency on the extended line. This project is under construction.

Warm Springs

The Warm Springs Extension will extend 5.4 miles of double track from the existing Fremont Station, continuing southward in the railroad corridor and terminating at the Warm Springs Station just south of Grimmer Avenue in Fremont. An intermediate station is planned at Washington Boulevard in the Irvington District. This extension will move BART further toward Santa Clara County and be an important step in "ringing the Bay".

Colma

The Colma Station Extension will add one station approximately one mile past the Daly City Station. This will relieve future access and traffic circulation problems at Daly City and provide additional system access via I-280 and Route 1. It is also the first leg of the proposed extension to San Francisco International Airport. This project is under construction.

San Francisco Airport

The proposed San Francisco Airport Extension will extend the BART system further into San Mateo County from the new Colma Station to San Francisco International Airport, with three other stations at Hickey, Tanforan, and Millbrae. The project is currently defined as tunneling under the Airport to a station in close proximity to the airline terminals, but alternative design options are still under analysis. This extension will help to reduce Bay Area-wide traffic congestion, improve air quality and provide a convenient, cost efficient transportation link between BART and CalTrain and to the West Bay communities.

Other Extension Projects

Oakland Airport Connector

The Oakland Airport Connector Project will directly connect the BART Oakland Airport/Coliseum Station with the Oakland Airport terminals, providing improved transit service for air travelers and air terminal employees. BART is currently completing an FTA-supported feasibility study as the first phase of the Suspended Light Rail Technology Pilot Project, and anticipates possible future selection to proceed to a second phase, preliminary engineering and environmental documentation.

Commuter Rail System

Three new commuter rail lines serving the corridors planned for Phase II and III BART extensions (and beyond) would add more than 200 miles of active track to the regional rail network. This would provide near-term critical intermodal connections to alleviate bottlenecking in some of the most heavily congested commuter corridors in the Bay Area. This program could utilize leased equipment and trackage rights in order to be brought on-line as quickly as possible, within two years of funding approval.

Seismic Retrofit Program

The purpose of this program of projects is to bring the existing system up to the latest seismic standards to enhance the system's ability to safely endure severe earthquakes and quickly return to service by:

- Improving the structural strength of BART's aerial structures and Transbay Tube joints in order to withstand greater seismic forces.
- Improving the system of seismic detectors which slows or stops trains in the event of an earthquake.
- Installing automatic seismic gas shut-off valves.
- Providing engine-generators for the event of a possible PG&E power loss.
- Provide restraints for overhead crane structures at maintenance shops.
- Provide tie downs for the stands that transit vehicles are supported on during maintenance at the shops.

The structural strengthening components of this project will bring existing structures up to current seismic standards, and improve the ability of the system to withstand major earthquakes with little or no damage. Other components of this project will augment earthquake preparedness systems already in place to provide more coverage, more detailed and accurate information, and to permit faster response to protect the safety of the rail system, its patrons and employees.

Service Improvements Program

Reconfigure and Rehabilitate Hayward and Concord Shops

The increasing size of the operation fleet requires that the heavy maintenance facilities at these two shops be reconfigured and rehabilitated in order to increase their efficiency adequate to properly maintain the expanded fleet.

Additional Capacity Enhancement

The basic program of capacity enhancement projects listed as individual projects in this *Capital Improvement Program* is intended to accommodate patronage growth to 370,000 daily trips. The Service Improvement program area also includes an Additional Capacity Enhancement subprogram which would go well beyond the basic program, to accommodate growth to 500,000 daily trips. The Additional Capacity Enhancement subprogram is conceptual and still under development, but it would include additional transit vehicles; additional traction power and train control rehabilitation and upgrades; other reliability improvements; improved station circulation and access; and further expansion of maintenance shop and storage yard facilities beyond the projects listed separately in this *Capital Improvement Program*. This cost indicated for this item provides a preliminary estimate of what these additional improvements might entail.

West Oakland Parking Expansion

This project would be constructed in the area near West Oakland Station that is being considered for use by other agencies for the Cypress Corridor freeway replacement and inter-city rail service. The scope, cost and schedule for the project is subject to the results of these various planning activities.

El Cerrito Plaza Parking Expansion

Contra Costa County Measure C provides $5.5 million in funding for BART patron parking expansion at the El Cerrito Plaza Station. BART and the City are currently cooperating on a study to determine at which station additional access improvements are most needed and manageable. The scope, cost and schedule of this project will be finalized upon completion of that effort.

Hayward, BayFair, Concord, Walnut Creek, and Daly City Transit Centers

These projects will improve traffic circulation in the vicinity of these stations, and will improve the patron experience by providing upgraded bus waiting and loading areas, weather protection and other amenities. These projects are funded with Section 9 and STP/CMAQ, and state funds, and are underway.

AC Transit-Funded Transit Centers

AC Transit has applied for funding from a variety of sources to construct transit centers, as described above, at Richmond, Fruitvale, Fremont, South Hayward, Coliseum/Oakland Airport, Union City, and West Oakland Stations. BART will implement these projects should they secure funding.

New Administration Building

This project would acquire a new administration building large enough to accommodate all of the District's administrative employees in a centralized location. It is often necessary for BART employees to conduct business with each other in person. Staff time could be used much more productively if employees did not have to travel among BART's various locations throughout Oakland in order to get things done. The acquisition of a new administrative building would improve efficiency and productivity.

Station Entrance Canopies

This project would install 50 canopies over the escalators and pedestrian entry ways at ten underground stations in San Francisco, Oakland and Berkeley. This project would result in weather protection for patrons entering the stations, reduced escalator maintenance costs, less escalator down time, increased security during non-revenue service periods and generally improved access to stations.

Research, Development & Demonstration

Advanced Automatic Train Control (research phase)

The District is currently involved in the development and demonstration of an advanced train control technology which will enable the BART system to nearly double its train carrying capacity by allowing decreased headways between trains. Initial research funding was provided by the Federal Transit Administration. The project is currently transitioning into more advanced phases—see the discussion of AATC in the Controls & Communications Rehabilitation section for more information.

Superconducting Magnetic Energy Storage (SMES)

Two related projects are intended to study the technical and economic feasibility of utilizing SMES technology to minimize voltage sag problems in critical locations in the system. Addressing the voltage sag problem is critical to plans to operate trains at closer headways to support projected future service levels. Two different approaches are being pursued. A Federal Transit Administration (FTA) grant is currently funding a study to evaluate the feasibility of applying SMES to the BART system. As part of this effort, BART expects to test a "solenoidal" SMES device. BART is also cooperating with private industry in applying for Advanced Research Project Administration (ARPA) defense conversion funding to develop and test a SMES device using the "torroidal" approach.

Electric Station Cars

The District is funded for a demonstration program to purchase 45 electric cars to be used by BART and PG&E employees for access to and egress from stations. The project will demonstrate that with "station cars", transit can provide an all electric door-to-door service that will attract new patronage.

Joint Development Entrepreneurial Study

This project will define and assess different public/private institutional arrangements to more effectively implement BART's Joint Development program. The project includes development of model documents for implementation of a selected arrangement, and development pro formas for up to three selected station sites to assess the viability of joint development. The FTA will use this study's report as a national model. The need to identify more effective public/private arrangements for joint development at BART is in keeping with the growing need to coordinate population and employment growth along with the BART fixed rail system, and thus reducing traffic.

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CAPITAL IMPROVEMENT PROGRAM

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P.O. Box 12688
Oakland, CA 94604-2688
Telephone (510) 464-6000

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September 15, 1995

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Dear SRTP/CIP Recipient:

On September 14, 1995 the BART Board of Directors adopted the District's 1995 Short Range Transit Plan and Capital Improvement Program covering the ten year period from fiscal year 1996 through 2005. These two documents identify BART's plans for service expansion and the capital projects needed to maintain and expand service levels. These final documents supersede the draft documents dated July 14, 1995 and August 28, 1995.

The SRTP and CIP are required documentation in support of BART's applications for grant funding through the Metropolitan Transportation Commission (MTC). The SRTP and CIP were developed in conformance with MTC guidelines for preparing these documents. Specifically, MTC provided projections of funding sources to be considered reasonable for planning purposes.

The SRTP contains a Summary with the main body of the document divided into four chapters:

- Chapter 1 presents a brief history of the District and its current organization, major components of its capital plant, a description of service, and information on fares.

- Chapter 2 identifies BART's goals and objectives, and presents an evaluation of service along with key events and activities which occurred in FY 95.

- Chapter 3 discusses the forecast for BART ridership and presents the service plans for rail, express bus, and ADA paratransit for the ten year period and resulting deficits. Two scenarios with differing sales tax growth assumptions are presented to illustrate how the baseline deficits might be eliminated.

BAY AREA RAPID TRANSIT DISTRICT

MPROVEMENT PROGRAM

SCAL YEARS 1996 - 2005

as been financed in part through a grant from the United rtation, Federal Transportation Administration under the Act of 1964, as amended and passed through the Commission. This report has been prepared in nes for Short Range Transit Plans.

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t was researched and prepared by:

Dale Fousel

Capital Programming Division
ent of Capital Development & Control
cisco Bay Area Rapid Transit District

dopted September 14, 1995

fax: (510) 287-4760

We thank you for your interest in BART and your continued support of our efforts to improve and expand service throughout the Bay Area.

Sincerely,

Richard A. White

Richard A. White
General Manager

Attachments

B A R T

BAY AREA RAPID TRANSIT DISTRICT
800 Madison Street - Lake Merritt Station
P.O. Box 12688
Oakland, CA 94604-2688
Telephone (510) 464-6000

September 15, 1995

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05 1995

MICHAEL BERNICK

Dear SRTP/CIP Recipient:

SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT

CAPITAL IMPROVEMENT PROGRAM

FISCAL YEARS 1996 - 2005

The preparation of this report has been financed in part through a grant from the United States Department of Transportation, Federal Transportation Administration under the Urban Mass Transportation Act of 1964, as amended and passed through the Metropolitan Transportation Commission. This report has been prepared in conformance with MTC guidelines for Short Range Transit Plans.

The contents of this report reflect the views of BART which is responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the original views or policy of the U.S. Department of Transportation. This report does not constitute a standard, specification, or regulation.

All projects discussed are subject to state and federal environmental review as required by law. Specific projects and project funding are subject to approval by the BART Board of Directors. Projects that do not yet satisfy these requirements are proposed projects.

This report was researched and prepared by:

Dale Fousel

Capital Programming Division
Department of Capital Development & Control
San Francisco Bay Area Rapid Transit District

Adopted September 14, 1995

SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT

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Department of Capital Development & Control
800 Madison Street
Oakland, California 94607

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Introduction:
Capital Improvement Program

July 1995 through June 2005

Fiscal Year 1994-95 *saw major advances in the development of the Bay Area Rapid Transit (BART) system.*

Service Improvements completed last year include three major parking structures, which added more than 2,300 new parking spaces. Delivery of 80 new transit railcars began. Modifications were made to the train control system which will allow BART to incrementally increase the frequency of trains through the most congested segments of the system. And funding was secured for the development and testing of an even more advanced, high-tech train control system, which promises the ability to permit further significant increases in BART's train carrying capacity by the late 1990's. Funding was also secured to begin capital projects necessary to comply with the Americans With Disabilities Act (ADA).

System Extensions are moving forward rapidly. Construction is almost complete on BART extensions to Colma and North Concord-Martinez. The further extension to Pittsburg-Bay Point and the new line to Castro Valley and East Dublin-Pleasanton are in advanced stages of construction. Substantial progress is being made in the planning, design and funding of the proposed extension from the new Colma Station to San Francisco International Airport .

System Rehabilitation is becoming increasingly critical, and important developments are underway in this area, too. Rehabilitation of the original fleet of rail cars is at the heart of this program, and the contract to accomplish this has been executed. BART and the Metropolitan Transportation Commission (MTC) concluded one of the most important regional transit funding pacts of recent years, setting forth a cooperative plan to fund $650 million toward the cost of rebuilding the fleet and other critical components of the BART system.

Fiscal Year 1995-96 *will see the close of an important chapter of BART's history and the opening of another. The first extensions will come on-line after many, many years of planning, financing and building. Implementation of the San Francisco Airport extension is expected to move forward rapidly. And rehabilitation of the system will take center stage to carry BART and its customers into the 21st Century.*

CHAPTER 1

CONTEXT AND ORGANIZATION OF THE PROGRAM

Context of the Program

BART faces enormous challenges as it prepares to enter the 21st Century with this *Capital Improvement Program*. The District is well into building a multi-billion dollar program of rail system extensions, while at the same time undertaking an unprecedented program of rehabilitating and upgrading the existing system, and improving system accessibility -- all while maintaining and even improving the level of service provided.

An Aging System:

The System Rehabilitation Program

When BART initiated service in 1972, it was state-of-the-art: the most modern, most automated rail transit system in the world. Now, more than two decades later, BART is no longer the same sparkling new system. Although the level of service provided has increased dramatically over these 23 years, now is the time to undertake a major program of system rehabilitation to ensure that service does not deteriorate in the future.

BART now carries twice as many passengers daily than in its early years, patronage is still growing, and the equipment is aging. This combination puts the BART system at risk if steps are not taken immediately to ensure the system's future reliability. Most of the hardware that comprises the BART rail system will reach the end of its operational lifetime over the next few years unless it is rebuilt or replaced. Rehabilitation funding requirements are generated from a planned replacement cycle based on useful life. Examples of the aging of the BART system include:

- the typical BART railcar has accumulated over a million miles of travel;
- the doors on a typical car have cycled more than three million times;
- nearly a billion people have been transported in these vehicles, used the farecard vendors, activated the faregates, and ridden the escalators or walked the stairs;
- many of the electronic and computer systems which heralded a new era of rail transit technology a generation ago are now becoming obsolete, and therefore increasingly difficult and expensive to maintain.

This onset of aging makes it essential for BART to begin rebuilding before it experiences the declining spiral of effects that many older rail transit systems have experienced due to their inability to attend to preventative maintenance and

rehabilitation in a timely manner. This is not glamorous, high-visibility work, and it is very expensive. But it is essential, and in the long run ***it is much more cost effective to rehabilitate systems before reaching the point of failure than to try to fix problems after they become obvious***. This will also avoid future degradation of service and consequent loss of patronage and fare revenue.

BART must not only maintain its current level of service while undergoing both expansion and rebuilding, but also provide even higher levels of service to meet the needs of a growing market. To provide reliability at higher levels of service, this *Capital Improvement Program* reflects the need for major rehabilitation for transit vehicles, train controls, stations, communications systems, maintenance facilities and many other parts of the BART physical plant.

A Growing System:

Planned Growth and New Services

BART patronage has grown dramatically in the last decade, about 80 percent growth from under 140,000 trips on an average weekday in the early 1980's to a weekday average of nearly 250,000 daily in fiscal year 1995. Patronage is expected to continue to grow in the future, and this will require additional facilities and capabilities. While BART invested heavily in increasing its people-carrying capacity over the last ten years, continued growth in patronage will require continued capacity expansion. In order to accommodate growth expected to reach 361,000 trips per day in the next ten years, this capital program calls for improved system access, more reliable fare processing equipment, increases in the supply of power to operate more and longer trains, an advanced system of automatic train control to increase the frequency of train service, and additional maintenance facility capacity.

BART has completed a program of significant expansion of patron parking over the past few years. In calendar year 1994 alone, new patron parking structures were opened at Concord, Walnut Creek, and Hayward Stations, adding more than 2,300 spaces. The next few years will see BART's station access improvement program focusing on "intermodal" bus access projects. These projects, several of which are just getting underway, will increase the capacity to handle more feeder buses at the stations, along with providing more comfortable amenities for patrons who transfer to and from buses at BART stations. In addition, a highly innovative grant-funded demonstration program just getting underway involves a test of electric "station cars" as one more possible means of improving connections at both ends of BART rail trips.

Replacement of worn and unreliable escalators and deteriorating farecard vending equipment, along with other station rehabilitation projects and implementation of better interoperator fare mechanisms, will improve the flow of patrons through the stations, while providing increased customer convenience.

The basic program of capacity enhancement projects, such as those indicated above, is intended to accommodate patronage growth to 361,000 daily trips in the next ten years. Beyond this goal, the *Capital Improvement Program* also includes an "Additional Capacity Enhancement" subprogram which would go well beyond the basic expansion program, to accommodate growth to 500,000 daily trips. The Additional Capacity Enhancement subprogram remains conceptual and is still under development, but it would include additional transit vehicles, additional traction power and reliability upgrades, further improvements to station circulation and access, and further expansion of maintenance shop and storage yard facilities beyond the specific projects listed separately in this *Capital Improvement Program*. The conceptual cost estimate indicated for this subprogram provides a preliminary estimate of what these additional improvements might entail.

The first phase of BART's extensions to the rail system is moving forward rapidly. Construction is almost complete on extensions to Colma and North Concord-Martinez. The further extension to Pittsburg-Bay Point and the new line to Castro Valley and East Dublin-Pleasanton are in advanced stages of construction. Substantial progress is being made in the planning, design, and funding of the proposed extension from the new Colma Station to San Francisco International Airport.

Also continuing in this year's *Capital Improvement Program* is BART's proposed network of regional commuter rail service. The District remains committed to implementing the long-planned Phase 2 and Phase 3 extensions of BART rail service to Antioch, Livermore, northwestern Contra Costa County, the San Ramon Valley, the South Bay, and other corridors. But anticipated funding limitations during the next ten years will almost certainly push their completion beyond that time frame. As a near-term interim solution, a network of commuter rail service using conventional diesel locomotives and standard passenger railcars could be placed into service in these same extension corridors at much lower costs and within two years of funding approval.

System Accessibility:

Americans With Disabilities Act Compliance

The BART system has been hailed as a model of public transit accessibility for persons who are elderly and/or disabled, ever since the system began operation. For two decades it was held up as a standard worthy of emulation by other systems. To this day BART remains one of the most accessible rail systems in the world. But the federal Americans With Disabilities Act (ADA) has set even more comprehensive standards than those currently offered by BART or any other rail transit agency in the world. BART is moving aggressively to implement projects necessary to come into compliance with the new regulations.

Organization of the Program

This *Capital Improvement Program* is organized in two basic dimensions: Program Areas and RTP Status. Program Areas is the primary organization. There are five major programs into which all of the approximately 250 separately listed projects are organized. Three of the Program Areas have sub-program categories as well.

Program Areas

I. **System Rehabilitation**
    A. Rolling Stock
    B. Mainline
    C. Stations
    D. Controls & Communications
    E. Shop & Yards
    F. Work Equipment
II. **Extensions**
    A. Phase 1 Extensions
    B. Oakland Airport Connector
    C. W. Dublin/Pleasanton Station
    D. Pittsburg-Bay Point to Railroad Ave. Extension
    E. Phase 2 & 3 Extensions
    F. Commuter Rail System
III. **Seismic Retrofit**
IV. **Service Improvements**
    A. Current Planned Expansion
    B. Additional Capacity Enhancement
V. **Research, Development & Demonstration**

RTP Status:
Track One and Track Two Programs

This *Capital Improvement Program (CIP)* lists all of the projects which the District would implement if adequate funding were available. However, a program of this size (a need of $5.4 billion) is currently beyond the level of funding which can reasonably be assumed to become available through existing sources over the next ten years. Therefore, in accordance with the approach being taken by the Metropolitan Transportation Commission (MTC) in its development of the 20-year *Regional Transportation Plan*, BART's CIP is divided into two "tracks", into which projects are assigned.

Track One is "financially constrained" per MTC's direction, and comprises those projects that are essential to continued safe and reliable operation of the system. Track Two includes projects for which the projected future levels of existing funding sources are inadequate. Implementation of Track Two projects would require larger allocations to existing federal and state programs in the future, and/or the creation of new funding sources. See Chapter 2 (Funding Strategy) for more information.

Definitions of Project Priority Classifications

Each project in the program has been assigned a priority level, independent from its RTP status. Priorities range from a high of 1 to a low of 5, based on degree of criticality to maintenance of the system, safety, operation of the extensions, and service improvements.

1 Mandated by law or code, safety-critical, District assets jeopardized, system operations and patron service levels will be severely impacted, or essential to ensure operation performance of the extensions lines.

2 System operations and patron service levels will be seriously impacted, safety-sensitive, District assets at risk, operating costs will be severely impacted, or introduction of technological advancements which significantly improve operational performance or result in significant cost efficiencies.

3 Operating cost or performance levels will be affected, increased service levels or system improvements will be delayed, District goals will not be achieved.

4 Routine replacement of worn or obsolescent equipment or systems, desirable system improvements, or reduced maintenance costs.

5 Identified need, but no near-term future cost or service impact.

There is also a time element involved in project priorities. Priorities as identified in this program relate to needs *at this time*. Any rehabilitation, replacement or improvement not implemented according to scheduled need may rise in priority at a later date if deferred implementation increases the risk to operations, safety, or impact on operating costs.

Planned Expansion and Additional Capacity Enhancement

There is one further organizational strategy used in this plan. The Track Two "Current Planned Expansion" listing in the Service Improvement program area includes those projects which are desirable to accommodate patronage growth to 361,000 daily trips by fiscal year 2005. The Service Improvement program area also includes an "Additional Capacity Enhancement" subprogram in Track Two. The Additional Capacity Enhancement subprogram is conceptual and still under development, but it provides a preliminary estimate of the cost of various system improvements which would be necessary to accommodate growth to 500,000 daily trips.

CHAPTER 2

FUNDING STRATEGY

Funding Strategy

The full scope of this *Capital Improvement Program (CIP)* forecasts a need of $5.4 billion in order to complete all of the capital work BART would like to do if adequate funding were available. However, a program of this size is currently beyond the level of funding which can reasonably be assumed to become available through existing sources over the next ten years. Therefore, in accordance with the approach being taken by the Metropolitan Transportation Commission (MTC) in its development of the 20-year *Regional Transportation Plan (RTP)*, BART's CIP is divided into two "tracks", into which projects are assigned based on likelihood of securing funding during the next ten years (the timeframe of this CIP).

Track One is "financially constrained" per MTC's direction, and comprises those projects that are essential to continued safe and reliable operation of the system. Track Two includes projects for which the projected future levels of existing funding sources are inadequate. Implementation of Track Two projects would require larger allocations to existing federal and state programs in the future, and/or the creation of new funding sources. Such new sources might include a dedicated FTA demonstration program for Suspended Light Rail Transit (Oakland Airport Connector), a new regional gas tax for transit, higher state gas tax and/or increased bridge tolls for transit, renewal of existing county sales taxes for transit, new county sales taxes or other support from counties which would benefit from Commuter Rail, and developer fees.

BART's program indicates a need of just over a billion dollars to fund the full range of desirable system rehabilitation projects over the next ten years. In May 1994, BART and the Metropolitan Transportation Commission (MTC) jointly adopted a cooperative funding program to address BART's most immediate system rehabilitation needs. This agreement calls for MTC to program $450.8 million for BART rehabilitation and for BART to internally generate $200.5 million as its match to the proposed grant funds. In fact, BART intends to generate substantially more than that amount in order to fund essential rehabilitation projects beyond the scope of the BART-MTC agreement. With this funding package, most of the system rehabilitation program is included in Track One. Funding cannot yet be identified for the remaining $188.3 million portion of the system rehabilitation program, and so that portion is currently assigned to Track Two.

The Pittsburg-Bay Point, Dublin-Pleasanton, and Colma extension projects are fully funded. The funding package for the extension to San Francisco International Airport is currently being finalized. All of these projects are therefore included in Track One. Funding for other extension projects, as well as for the Seismic Retrofit and Service Improvement program areas, remains uncertain at this time. These program areas therefore are included in Track Two.

Tabular summaries of the proposed Track One and Track Two funding strategies are presented on pages 26 and 27.

Funding Strategy by Program Area

System Rehabilitation

A and B Car Rehabilitation

Rehabilitation of the over 23-year-old BART system is at the heart of BART's capital program. The largest single component of system rehabilitation is rebuilding the original fleet of A- and B-cars to extend their useful lifetimes. The budget for this effort is currently set at $475.9 million, including a pro-rated share of the cost of "float" cars, from the C-2 car purchase. These C-2 cars will be used to maintain operating fleet size while A&B cars are out of service.

The funding program jointly adopted by BART and MTC for this project includes the programming of $239.5 million in FTA Section 3 funds, $30 million in federal STP/CMAQ funds, almost $17 million in state Proposition 108 and TCI funds, and $24 million in Bridge Toll funds, over the period fiscal year 1995 through fiscal year 2004. The funding plan requires BART to provide the balance of the funding, or approximately $165.5 million.

In January of 1995 the BART Board of Directors approved a series of three fare increases to generate funds for system rehabilitation, among other needs. A bond issue made in May 1995, backed by the first of these fare increases, will provide the first increment of the $165.5 million that BART must contribute for car rehabilitation. Future bond issues, backed by fare increases, will provide the balance of BART's obligation.

Other System Rehabilitation

Other than rehabilitation of the fleet of A- and B-cars, the unfunded Track One BART system rehabilitation program totals approximately $428.3 million. The new BART-MTC cooperative funding agreement programs significant funding for these other system rehabilitation needs, in addition to funding for vehicle rehabilitation. Specifically, the plan sets forth a target of $140.3 million in FTA Section 9 funds. MTC guidance also indicates that $8.7 million in Bridge Tolls may be available to BART over the ten-year period, above the $24 million programmed for car rehabilitation (as noted above). BART also anticipates receiving approximately $33.2 million in non-traditional transit funding dedicated to the Advanced Automatic Train Control (AATC) project described below, which is part of the Track One program of rehabilitation projects. This funding scenario leaves a Track One rehabilitation balance of $246.1 million, which is expected to be generated though future bond issues backed by fare increases. An unfunded rehabilitation program of about $188.3 million remains in Track Two.

Advanced Automatic Train Control (AATC)

BART is pursuing new technology which promises much greater sophistication in train control, and which will permit significant increases in the train-carrying capacity of the existing trackway. The technology under study is derived from recent defense industry advances in locational tracking of vehicles and equipment. The District, together with private sector partners, have secured $31.5 million in federal defense conversion, private sector, and BART funding for the first two phases of the project, which involves technology development and field testing. If these phases prove successful, the District will pursue additional funds to implement the project. These sources would include additional defense conversions funds, private sector financing, and new state and local sources which may become available in the next few years. The total estimated cost of the project as currently defined (installation between Bay Fair Station and Daly City Station) is approximately $64.7 million, of which $33.2 million is unfunded but considered fundable under Track One.

Telecommunications Joint Development

BART has entered into an innovative agreement with Metropolitan Fiber Systems Network Technologies, Inc. (MFSNT), which will provide the District with a state-of-the-art, fully integrated new telecommunications system. In exchange for advancing to BART the cost of a new telecommunication system, MFSNT will have the right to market BART's right-of-way to private telecommunication companies with BART receiving 91 percent of the generated revenue. Thus, the agreement between MFSNT will internally finance BART's new telecommunication system---revenue generated for BART will be used to pay off the capital cost of the new system.

Extensions Program

Castro Valley and East Dublin-Pleasanton

This two-station extension is fully funded with all programmed project revenues currently executed in funding agreements with state and local agencies. BART will continue seeking funding unrelated to the MTC Resolution 1876 regional agreement, for completion of the third station at West Dublin-Pleasanton. Local jurisdictions in the Tri-Valley area are investigating the possibility of transportation impact development fees as one potential source of partial funding.

North Concord and Pittsburg-Bay Point

This extension is considered fully funded for two stations, assuming all programmed funding is realized as currently planned. This programmed funding includes some project revenues from SamTrans which are contingent upon the San Francisco International Airport extension being approved for construction. Funding is also programmed in the Contra Costa Transportation Authority's Measure C Expenditure

Plan to provide $104 million ($58 million in 1988 dollars) in Measure C sales tax revenues to continue the extension out to Railroad Avenue.

Colma

This one-station extension is fully funded with all programmed project revenues currently executed in funding agreements with federal, state and local agencies.

San Francisco International Airport

The proposed extension from the new Colma Station to San Francisco International Airport, with intermediate stations, is currently estimated to cost $1.269 billion (for the project alternative involving tunneling beneath the airport). To date, $86.6 million has been allocated to this proposed extension for Alternatives Analysis, project development, preliminary engineering and environmental impact assessment. Various design options are currently under analysis, which could affect the estimated project cost. The funding plan for the project as currently defined is comprised of a total $800 million in federal Section 3 "New Starts" funding (of which $57.6 million has been received to date, including Alternatives Analysis), $99 million total from SamTrans ($14.5 million received to date), $98 million total state funds ($14.5 million received), $200 million in a commitment from San Francisco, and $72 million in other state and local sources.

Oakland Airport Connector

BART is competing for funding for development and implementation of the Oakland Airport Connector using Suspended Light Rail Transit technology under a special federal demonstration funding program for this type of project. If the FTA selects the District to continue with the project, the next step in the process is completion of an EIR/EIS and preliminary engineering, for which $4 million in additional federal funds are currently being sought. If this funding is realized, BART and the Port of Oakland together will need to provide $1 million in local match. If the results of these studies are positive, BART will seek implementation funding for this Track Two project in cooperation with the Port of Oakland

Warm Springs

The Warm Springs Extension was estimated to cost $540.8 million in 1990. The current RTP indicates funding available to a Fremont-to-South Bay rail extension totaling $348 million. The cost and financial plan for this project will be updated when a new project implementation schedule is completed.

Commuter Rail System

BART has proposed this Track Two project for regional funding consideration through the RTP process. It is assumed that funding would be provided by the state and those jurisdictions which would benefit from these services and which are not part of the BART District.

Phase 2 and 3 System Extensions

The BART system expansion program has, for many years, included extensions of the BART rail system beyond the ends of the Phase 1 extension program. These include extensions to the Antioch, Livermore, northwestern Contra Costa County, the San Ramon Valley, the South Bay, and other corridors. BART will actively pursue funding for the further planning and development of these projects, However, funding cannot reasonably be projected to become available for implementation within the timeframe of this ten-year program, so these projects are carried as Track Two projects.

Seismic Retrofit Program

At the time of its construction, BART was built to the most demanding seismic standards of the day. This level of design has served the region extremely well. During the time that the San Francisco-Oakland Bay Bridge and other regional freeway facilities were out of service for repairs following the major earthquake of October 1989, BART continued to operate smoothly and without incident.

Seismic design has developed considerably over the last 25 years, however. BART's extensions are being built to these new, more stringent standards. BART has proposed that the entire existing system be brought up to these new standards as well. This would be a major undertaking, with a current cost estimate of $229.4 million. This program is not fundable under current projections of future allocations of traditional transit funding sources, therefore this is listed as a Track Two project. It is the BART District's position that a dedicated funding source should be identified for this proposed program, similar to the state program which is currently retrofitting the highway system for seismic strengthening. There is no other existing funding source capable of handling a program of this magnitude without seriously compromising transit operations in the region. BART intends to carefully review this matter with the California Department of Transportation (Caltrans) and the California Transportation Commission (CTC), as well as the Metropolitan Transportation Commission (MTC).

Service Improvements

In the area of Service Improvement, the BART capital program indicates the desirability of upgrading the traction power supply system and expanding the capacity of the Concord and Hayward vehicle maintenance shops. These projects are still conceptual, pending further analysis, and funding cannot currently be identified from available sources, so these are Track Two projects at this point in time.

BART and AC Transit have jointly developed a program of transit center (bus-to-BART) improvements which could be implemented at various BART stations. Several of these proposed projects are programmed for Section 9 funding through AC Transit. No other funding is currently available for such projects, so they are listed as Track Two until such time as the programmed AC Transit funding is secured.

The proposed new BART administration building, the escalator entrance canopy enclosure project, and the still-conceptual "Additional Capacity Enhancement Program" are also Track Two proposals at this time.

Research, Development & Demonstration

BART has embarked on an ambitious program of technology research, development and demonstration. *R,D&D funding is expected to continue to come from sources other than those typically available to transit, and will therefore not compete with or otherwise compromise the delivery of transit service in the region.*

The District has an existing grant to study the feasibility of using ***Superconducting Magnetic Energy Storage (SMES)*** as a means of supplementing traction power in locations where it is technically very difficult and/or too expensive to install additional conventional power supply, such as deep in the Transbay Tube. If the current initial studies prove promising, BART will seek additional funding to further develop and ultimately implement SMES technology.

Another area of technological promise under development is ***Electric "Station Cars"***. BART is a member of state and national consortia working to demonstrate the use of electric vehicles as "station cars". The concept is to provide an all-electric, non-polluting transportation system linking public rail transit with the need for personalized trip-making at both the origin (home) and destination (work, shopping, recreation, etc.) ends of the trip. The District has been awarded $1.4 million in demonstration funding from defense conversion sources, the Bay Area Air Quality Management District, PG&E and Caltrans. Additional funding from these and other sources will be pursued as needs and opportunities arise.

Other areas in which BART is exploring the possibilities of leading edge technological developments and opportunities for R,D&D funding include ***Active Noise Abatement, Artificial Intelligence, Advanced Traveler Information Systems, Security Enhancement***, *and* ***Automated Test and Monitoring Equipment***.

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Proposed Track 1 Funding Strategy

BART FY 1996-2005 Capital Improvement Program

all figures in millions of dollars, escalation set at three percent per year

Track One Program	Total Cost	Funding to date	Remaining Funding Req't.	Section 3	Section 9	STP/ CMAQ	Bridge Tolls	Other Fed. & St.*	Other *	BART	Cumul. BART	Notes
Extensions Program												
to East Dublin-Pleasanton	514.1	514.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
to West Pittsburg-Bay Point	505.7	505.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
to Colma	170.2	170.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
to San Francisco Airport	1,269.0	86.6	1,182.4	742.4	0.0	0.0	0.0	83.5	356.5	0.0	0.0	*1*
to Warm Springs	540.8	348.0	192.8	0.0	0.0	0.0	0.0	0.0	192.8	0.0	0.0	2
Rehabilitation Program												
A/B car rehab	475.9	54.5	421.4	203.3	0.0	30.0	24.0	0.0	0.0	164.1	164.1	3
Other rolling stock rehab	7.6	6.9	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.7	164.8	
Advanced auto. train control	64.7	31.5	33.2	0.0	0.0	0.0	0.0	16.6	16.6	0.0	164.8	*4*
Radio system replacement	40.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	164.8	5
Other Priority 1 Rehab **	209.3	47.3	162.0	0.0	140.6	0.0	8.7	0.0	0.0	12.7	177.4	
Priority 2 Rehab	243.3	10.8	232.4	0.0	0.0	0.0	0.0	0.0	0.0	232.4	409.9	
Research, Development & Demonstr.	TBD	3.6	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	409.9	
TRACK ONE TOTALS	4,040.5	1,819.2	2,224.9	945.7	140.6	30.0	32.7	100.1	565.9	409.9	409.9	

NOTES

- * *See numbered notes 1, 2 and 3 below for detail on "Other Federal & State" and "Other".*
- ** *Excluding A/B car and other rolling stock rehabilitation, advanced auto. train control, and radio system replacement, which are listed separately.*
- *1* *Estimated cost of proposed project in current Locally Preferred Alternative. Proposed funding plan includes a total of $800M from FTA Sec. 3, ($57.6M received to date including AA), $99M total from SamTrans ($14.5M received to date), $98M total in state funds ($14.5M received to date), $200M in a commitment from the City of San Francisco, and $72M from other state and local sources.*
- 2 *Warm Springs cost estimate prepared in 1990; subject to updating when a new schedule is determined. Additional funding must be secured to implement this extension. "Funding To Date" is per RTP South Bay rail project.*
- 3 *Per BART-MTC adopted cooperative funding plan. $15 million in CMAQ is considered assured; $15 million in STP may have to be programmed through county Congestion Management Agencies (CMAs) if region is not eligible for continuing CMAQ due to air quality compliance.*
- *4* *Proposes funding from private sector financing, defense conversion funds and/or new federal, state and/or local sources.*
- 5 *Funded 100% through vendor financing.*

Proposed Track 1 and Track 2 Funding Strategy

BART FY 1996-2005 Capital Improvement Program

all figures in millions of dollars, escalation set at three percent per year

See page above for details of Track 1.

	Total Cost	Funding to date	Remaining Funding Req't.	Section 3	Section 9	STP/ CMAQ	Bridge Tolls	Other Fed. & St. *	Other *	BART	Cumul. BART	Notes
TRACK ONE TOTALS	4,040.5	1,819.2	2,224.9	945.7	140.6	30.0	32.7	100.1	565.9	409.9	409.9	
Track Two Program												
Oakland Airport Connector	137.1	1.1	136.0	0.0	0.0	0.0	0.0	108.8	13.6	13.6	423.5	*1*
Commuter Rail System	350.0	0.0	350.0	0.0	0.0	0.0	0.0	350.0	0.0	0.0	423.5	2
W. Dublin-Pleasanton Station	32.0	0.0	32.0	0.0	0.0	0.0	0.0	0.0	28.0	0.0	423.5	
Pittsburg-Bay Point to Railroad Ave.	124.0	104.0	20.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	423.5	
Phase 2 & 3 extensions	TBD	3.3	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	423.5	
Seismic Retrofit	229.4	0.0	229.4	0.0	0.0	0.0	0.0	229.4	0.0	0.0	423.5	3
System Rehabilitation	196.7	8.4	188.3	48.9	60.0	15.0	0.0	TBD	64.4	TBD	423.5	4
Service Improvement	252.4	20.4	232.0	0.0	12.2	0.0	0.0	TBD	219.8	TBD	423.5	5
Add'l. Capacity Enhancement Prog.	2,000.0	0.0	2,000.0	TBD	TBD	TBD	TBD	TBD	TBD	TBD	423.5	
TRACK TWO TOTALS	3,321.6	137.3	3,187.7	48.9	72.2	15.0	0.0	688.2	2,345.7	13.6	423.5	
TOTAL PROGRAM	7,362.1	1,956.4	5,412.6									

NOTES

* *In Track Two, "Other Federal & State" and "Other" refer to possible new funding sources such as a dedicated FTA demonstration program for the Oakland Airport Connector, a new regional gas tax for transit, higher state gas tax and/or increased bridge tolls for transit, renewed existing county sales taxes for transit, new county sales tax or other support from counties benefitting from Commuter Rail, and/or other new funding.*

1 *Proposes 80% funding with federal SLRT demonstration funds and 10% local match each from Port of Oakland and BART.*

2 *Includes one-time capital cost and start-up costs for track and equipment. Assumes cost sharing by other beneficiaries of commuter rail program in the region.*

3 *Proposes that program be funded with a dedicated source, similar to the existing state highway bridge seismic retrofit program.*

4 *Proposes that BART continue to receive a share of regional Sec. 3 for system rehabilitation in FY04 and FY05, equivalent to the share to be allocated annually during the period of A/B car rehabilitation. Also proposes a higher level of Sec. 9 funding, additional STP funds, and funds from new sources in outyears.*

5 *The $12.2M in Sec. 9 shown for Service Improvement reflects MTC programming to AC Transit for Intermodal Transit Center development at BART stations.*

CHAPTER 3

FUNDING NEEDS

Summary of Funding Needs by Program Area

BART FY1996-2005 Capital Improvement Program

	Program Areas	Total Cost*	Funding to date	Funding Req't.*	Fiscal Year Need*					
					1996	1997	1998	1999	2000	2001-05
I.	System Rehabilitation									
A.	Rolling Stock	483,488	61,388	422,100	48,802	37,660	61,455	72,160	65,190	136,833
B.	Mainline	176,223	12,360	163,863	1,000	39,411	23,170	41,792	8,504	49,985
C.	Stations	183,738	21,166	162,572	4,500	69,292	20,054	13,855	11,650	43,221
D.	Controls & Communication	188,343	93,700	94,643	7,585	49,649	8,209	7,360	7,259	14,581
E.	Shops & Yards	172,238	9,443	162,795	7,910	24,859	6,896	5,600	5,853	111,678
F.	Work Equipment	33,358	1,359	31,999	1,150	8,809	4,835	3,110	3,900	10,195
	Subtotal	**1,237,389**	**199,416**	**1,037,973**	**70,947**	**229,681**	**124,619**	**143,878**	**102,356**	**366,493**
II.	Extensions									
A.	Phase 1 Extensions	2,999,771	1,624,593	1,375,178	1,182,378	0	0	0	0	192,800
B.	Oakland Airport Connector	137,124	1,124	136,000	5,000	0	131,000	0	0	0
C.	W. Dublin/Pleasanton Station	32,000	0	32,000	0	32,000	0	0	0	0
D.	Pittsburg-Bay Point to Railroad Ave.	124,000	104,000	20,000	0	0	0	20,000	0	0
E.	Phase 2 & 3 Extensions	TBD	3,295	TBD	TBD	TBD	TBD	TBD	TBD	TBD
F.	Commuter Rail System **	350,000	0	350,000	0	175,000	175,000	0	0	0
	Subtotal	**3,642,895**	**1,733,012**	**1,913,178**	**1,187,378**	**207,000**	**306,000**	**20,000**	**0**	**192,800**
III.	Seismic Retrofit	**229,404**	**0**	**229,404**	**0**	**7,385**	**28,623**	**25,133**	**25,887**	**142,377**
IV.	Service Improvements									
A.	Current Planned Expansion	252,422	20,414	232,008	0	41,297	71,389	31,213	207	87,902
B.	Additional Capacity Enhancement	2,000,000	0	2,000,000	0	0	0	0	0	2,000,000
	Subtotal	**2,252,422**	**20,414**	**2,232,008**	**0**	**41,297**	**71,389**	**31,213**	**207**	**2,087,902**
V.	Research, Development & Demonstr.	**TBD**	**3,566**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**
	GRAND TOTALS	**7,362,111**	**1,956,408**	**5,412,564**	**1,258,325**	**485,363**	**530,631**	**220,224**	**128,449**	**2,789,572**

NOTES:

* *All figures in thousands of dollars (three decimal places dropped), showing the fiscal year in which funding needs to be programmed, in order to be commited to project contracts.*

* *All figures calculated on a base of project cost in calendar year 1995 dollars, escalated at three percent per year, per MTC guidance.*

** *Commuter Rail Program costs based on one-time capital cost and start-up cost for equipment and right-of-way.*

Summary of Funding Needs by RTP Status

BART FY1996-2005 Capital Improvement Program

	Total	Funding	Funding	Fiscal Year Need					
RTP Status and BART Priority	Cost	to date	Req't.	1996	1997	1998	1999	2000	2001-05
Track One--Financially Constrained									
Priority 1									
Rehabilitation Program	797,442	180,154	617,288	60,187	144,300	66,179	83,600	71,690	191,332
Phase I Extensions Program	2,999,771	1,624,593	1,375,178	1,182,378	0	0	0	0	192,800
SUBTOTAL	**3,797,213**	**1,804,747**	**1,992,466**	**1,242,565**	**144,300**	**66,179**	**83,600**	**71,690**	**384,132**
Priority 2									
Rehabilitation Program	243,268	10,843	232,425	10,760	40,877	46,416	28,823	28,786	76,763
Research, Development & Demonstration	TBD	3,566	TBD	TBD	TBD	TBD	TBD	TBD	TBD
SUBTOTAL	**243,268**	**14,409**	**232,425**	**10,760**	**40,877**	**46,416**	**28,823**	**28,786**	**76,763**
Track One Subtotal	**4,040,481**	**1,819,156**	**2,224,891**	**1,253,325**	**185,176**	**112,595**	**112,424**	**100,476**	**460,895**
Track Two--Unconstrained									
Priority 1									
Oakland Airport Connector	137,124	1,124	136,000	5,000	0	131,000	0	0	0
Pittsburg-BayPoint to Pittsburg-Railroad. Ave.	124,000	104,000	20,000	0	0	0	20,000	0	0
W. Dublin-Pleasanton Station	32,000	0	32,000	0	32,000	0	0	0	0
Commuter Rail System	350,000	0	350,000	0	175,000	175,000	0	0	0
SUBTOTAL	**643,124**	**105,124**	**538,000**	**5,000**	**207,000**	**306,000**	**20,000**	**0**	**0**
Priority 2									
Phase 2 & 3 Extensions	TBD	3,295	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Seismic Retrofit Program	229,404	0	229,404	0	7,385	28,623	25,133	25,887	142,377
Service Improvement Program	126,920	0	126,920	0	10,197	33,949	20,871	0	61,903
SUBTOTAL	**356,324**	**3,295**	**356,324**	**0**	**17,582**	**62,572**	**46,004**	**25,887**	**204,280**
Priority 3									
Rehabilitation Program	162,722	419	162,303	0	30,226	9,569	23,130	1,494	97,885
Service Improvement Program	92,947	20,414	72,533	0	31,100	37,440	3,786	207	0
Add'l Capacity Enhancement Program	2,000,000	0	2,000,000	0	0	0	0	0	2,000,000
SUBTOTAL	**2,255,669**	**20,833**	**2,234,836**	**0**	**61,326**	**47,009**	**26,916**	**1,701**	**2,097,885**
Priority 4	**62,600**	**8,000**	**54,600**	**0**	**10,701**	**2,190**	**14,811**	**385**	**26,513**
Priority 5	**3,913**	**0**	**3,913**	**0**	**3,578**	**265**	**70**	**0**	**0**
Track Two Subtotal	**3,321,630**	**137,252**	**3,187,673**	**5,000**	**300,186**	**418,036**	**107,801**	**27,973**	**2,328,677**
GRAND TOTALS	7,362,111	1,956,408	5,412,564	1,258,325	485,363	530,631	220,224	128,449	2,789,572

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I-A. Rolling Stock Rehabilitation

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 1									
A&B car rehabilitation									
Rehabilitation program	454,400	54,500	399,900	48,102	26,760	50,855	72,160	65,190	136,833
Float vehicles (5 years of 36 vehicles) *	21,500	0	21,500		10,900	10,600			
Subtotal	***475,900***	***54,500***	***421,400***	***48,102***	***37,660***	***61,455***	***72,160***	***65,190***	***136,833***
Other rolling stock rehabilitation projects									
Replace electrical couplers on C-1 cars	2,200	2,200	0						
Install automatic train control restoration units	700	0	700	700					
Replace A&B car door components	4,688	4,688	0						
Subtotal	***7,588***	***6,888***	***700***	***700***					
Category Total	**483,488**	**61,388**	**422,100**	**48,802**	**37,660**	**61,455**	**72,160**	**65,190**	**136,833**

** New C-2 vehicles to be used initially as replacements for cars out of service for rehabilitation. After completion of the A/B Car Rehab Program, these vehicles will be additions to the overall fleet to accomodate patronage growth.*

All figures in thousands of dollars (three decimals places dropped).

I-B. Mainline Rehabilitation

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 1									
Replace running rail & accessories	34,470	3,826	30,644		5,408		5,737		19,499
Rehabilitate subway ventilation fans	1,687	1,687	0						
Recoat steel tunnel liner rings	1,062	666	396				186		210
Repaint structural girders & bridges for corrosion protection	1,831	1,192	639		639				
Transbay Tube cathodic corrosion protection	4,562	3,324	1,238					1,238	
Replace sump pumps in subway tunnels	2,028	1,080	948		948				
Asbestos abatement (high priority)	839	0	839		839				
Subtotal	***46,479***	***11,775***	***34,704***	***0***	***7,833***	***0***	***5,923***	***1,238***	***19,710***
Priority 2									
Rehab traction power equipment	26,000	0	26,000	1,000	3,000	4,000	5,000	6,000	7,000
Replace BHT fan controller	200	200	0						
Replace R-O-W fencing and barbed wire	958	118	840		82	85	87	90	495
Repair Lake Merritt Channel subway structure	1,819	0	1,819		361	1,459			
Replace traction power house roofs	310	90	220		108	111			
Rehab insulation in transformer rectifiers	1,082	52	1,030		1,030				
Reinforce coverboard mountings	206	0	206		206				
Repair or replace cable pipe at M-80	2,063	0	2,063				82		1,981
Replace 1 KV flex jumpers	567	0	567		567				
Replace asbestos-containing arc chutes	618	0	618		618				
Widen I-80 overcrossing in Richmond (Caltrans req't.)	125	125	0						
Remove obstructions on emergency walkways	361	0	361		361				
TBT vents automatic power transfer	2,566	0	2,566		232	2,334			
TBT fan and damper control improvements	412	0	412		412				
Replace TBT lower gallery lighting fixtures	180	0	180		180				
Additional blue light safety stations	155	0	155		155				
Hazmat containment around power transformers	927	0	927		927				
Remove gaps in handrail along emergency walkways	283	0	283		283				
Replace surfaces at maintenance set-on points	754	0	754		180	186	191	197	
Asbestos abatement (moderate and low priority)	5,347	0	5,347			5,347			
Subtotal	***44,931***	***585***	***44,346***	***1,000***	***8,701***	***13,522***	***5,361***	***6,287***	***9,476***

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I-B. Mainline Rehabilitation (continued)

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need 1996	1997	1998	1999	2000	2001-05
Priority 3									
Replace diode with thyristor grounding at power substa.	2,016	0	2,016			2,016			
Repair structure damage in S.F. approach tunnel	927	0	927		927				
Retrofill traction pwr. transformer dielectric liquid	2,407	0	2,407		309	318	328	338	1,114
Replace contact rail (worn segments systemwide)	12,657	0	12,657		52			225	12,381
Replace contact rail (entire M-line)	20,600	0	20,600		20,600				
Replace C-line 34.5 KV cable	19,247	0	19,247		592	5,835	6,010		6,809
Repair or replace rectifiers and buss work	16,515	0	16,515		196	202	16,118		
Additional electrical insulation at various locations	159	0	159			159			
Motorize fire main valves in BHT	239	0	239			239			
Replace traction power control batteries	277	0	277		52	53	55	56	62
Subtotal	***75,044***	***0***	***75,044***	***0***	***22,727***	***8,821***	***22,510***	***619***	***20,366***
Priority 4									
Replace reclosers, potentials, transfer trip controls	1,471	0	1,471		31	297	350	360	433
Replace 1 KV disconnect switch enclosures	118	0	118		118				
Dry standpipes at I-680 and Springbrook crossings	371	0	371			371			
Tunnel hose valve plan	159	0	159			159			
Relocate crossover at C53	7,649	0	7,649				7,649		
Subtotal	***9,769***	***0***	***9,769***	***0***	***149***	***828***	***7,999***	***360***	***433***
Category Total	176,223	12,360	163,863	1,000	39,411	23,170	41,792	8,504	49,985

NOTES

All figures in thousands of dollars (three decimal places dropped), showing the fiscal year in which funding needs to be programmed, in order to be commited to project contracts.

All figures calculated on a base of project cost in calendar year 1995 dollars, escalated at three percent per year, per MTC guidance.

I-C. Stations Rehabilitation

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need 1996	1997	1998	1999	2000	2001-05
Priority 1									
Station security program	4,265	4,265	0						
Replace four Embarcadero Station escalators	2,867	2,867	0						
Rehabilitate station elevator valves & sills	510	510	0						
Repair concrete roof of Lake Merritt Station	356	356	0						
Repair platform sub-surface at six stations	462	462	0						
Replace platform edge tile	1,586	762	824		824				
Replace raised and damaged concrete walks at sta.	1,050	0	1,050		103	106	109	113	619
Replace station signage	1,662	1,485	177			53			124
Replace sewage pumps in underground stations	469	0	469		124	127	219		
Repair stair tread edges and replace anti-slip treatments	584	275	309		309				
Remove architectural barriers for accessibility	455	455	0						
Key Station (ADA) signage improvements	952	952	0						
Key Station (ADA) 12th Street elevator replacement	900	900	0						
Key Station (ADA) accessible AFC equipment	15,000	1,500	13,500		13,500				
Key Station (ADA) accessible parking improvements	391	0	391		391				
Replace AFC air dryers	314	0	314		155	159			
Replace Auto. Fare Coll. equip. (see also ADA AFC proj. above)	40,000	0	40,000		39,400	300	300		
Subtotal	***71,823***	***14,789***	***57,034***	***0***	***54,806***	***746***	***628***	***113***	***743***
Priority 2									
"Mint Station" program at four sta. per year	34,498	3,000	31,498		3,090	3,183	3,278	3,377	18,571
Energy conservation lighting retrofit in stations	22,849	1,850	20,999		2,060	2,122	2,185	2,251	12,381
Replace/rehab escalators and elevators systemwide	21,083	411	20,672	3,000	5,150	4,244	3,278	3,000	2,000
Replace fire mains in three stations	250	250	0						
Replace four stations fire alarm systems (downtown SF)	350	350	0						
Modify change machines	850	0	850	850					
Replace station security gates	2,188	97	2,091		1,030	1,061			
Add'l. faregates at 12th, Embarc., Pl. Hill, El Cerrito	1,030	0	1,030		1,030				
Replace P.A. systems at all stations	846	0	846		103	743			
Replace roofing on stations	2,041	0	2,041			90	475	411	1,065
Replace ceiling in No. Berkeley Station	1,061	0	1,061			1,061			
Replace lentel structures on W. Oakland platforms	1,901	0	1,901			371	1,530		
Refurbish station agents' booths and consoles systemwide	8,633	0	8,633			1,591	1,639	1,688	3,714
Replace sta. agents' booth air conditioning systemwide	159	0	159		52	53	55		
Build staff breakrooms at seven stations	470	0	470		232	239			
Refurbish restrooms at all stations	1,050	0	1,050		103	106	109	113	619
Upgrade station emergency lighting	3,968	0	3,968		361	3,607			
Station stairway detection warning (E&H)	129	0	129		129				
Restore damaged/missing wall tile	420	0	420		41	42	44	45	248
Repair and repaint all painted surfaces	525	0	525		52	53	55	56	310
Resurface parking lots at stations as needed	2,908	0	2,908		541	265	273	281	1,548
Restore worn floor tile and brick	315	0	315		31	32	33	34	186
Restore platform canopies and windscreens	470	0	470		258	212			
Replace AC and Muni transfer machines	650	0	650	650					
Subtotal	***108,643***	***5,958***	***102,685***	***4,500***	***14,260***	***19,075***	***12,954***	***11,256***	***40,640***

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I-C. Stations Rehabilitation (continued)

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
Priority 3				1996	1997	1998	1999	2000	2001-05
Replace station bike lockers	1,038	419	619						619
Replace locks at all stations	354	0	354		36	37	71	73	136
Replace station parking lot signs	306	0	306		36	37	38	39	155
Refurbish irrigation systems at landscaped sta.	525	0	525		52	53	55	56	310
Refurbish landscape and hardscape at stations	525	0	525		52	53	55	56	310
Refurbish/replace pigeon netting	525	0	525		52	53	55	56	310
Subtotal	***3,272***	***419***	***2,853***	***0***	***227***	***233***	***273***	***281***	***1,839***
Category Total	**183,738**	**21,166**	**162,572**	**4,500**	**69,292**	**20,054**	**13,855**	**11,650**	**43,221**

NOTES

All figures in thousands of dollars (three decimal places dropped), showing the fiscal year in which funding needs to be programmed, in order to be commited to project contracts.

All figures calculated on a base of project cost in calendar year 1995 dollars, escalated at three percent per year, per MTC guidance.

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I-D. Controls & Communications Rehabilitation

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 1									
Next generation control system essential *	14,405	11,185	3,220	3,220					
Replace radio network * ***	40,000	40,000	0						
Advanced automatic train control **	64,700	31,500	33,200		33,200				
Replace workstation consoles in Central *	1,240	1,240	0						
Replace Maint. Vehicle Detection Devices *	255	0	255	255					
Replace SORS systemwide ****	7,000	0	7,000		7,000				
Subtotal	***127,600***	***83,925***	***43,675***	***3,475***	***40,200***	***0***	***0***	***0***	***0***
Priority 2									
Rehab wayside train control equipment	33,000	0	33,000	1,000	4,000	5,000	6,000	7,000	10,000
Electronic display destination sign replacement (platforms)	5,747	0	5,747	2,110	2,173	1,464			
Portable radios for station agents ***	120	120	0						
Portable radios for maintenance personnel ***	120	120	0						
Replace Digital Transmission System	4,020	0	4,020		1,442	1,485	1,093		
Replace tower console IC, radio switch matrix & PA systems	41	0	41		41				
Replace yard cable plant	522	0	522		129	133	137	124	
Replace cable plant (excl. T1) systemwide	463	0	463		52	53	55	56	248
Replace wayside cable plant splice boxes syswide	129	0	129		129				
Yard tower data network	670	0	670		670				
Replace yard voice recorders	258	0	258		258				
Reverse running in Transbay Tube	130	130	0						
Comspec position in Central	267	195	72		72				
Replace MARIS (MIS) software	1,622	1,210	412		412				
MIS mainframe computer	5,333	0	5,333	1,000					4,333
Subtotal	***52,441***	***1,775***	***50,666***	***4,110***	***9,377***	***8,135***	***7,284***	***7,180***	***14,581***
Priority 3									
Replace CATV and CCTV systemwide	*302*	*0*	*302*		*72*	*74*	*76*	*79*	
Priority 4									
Replace T1 cable systemwide ***	*8,000*	*8,000*	*0*						
Category Total	**188,343**	**93,700**	**94,643**	**7,585**	**49,649**	**8,209**	**7,360**	**7,259**	**14,581**

** Does not include portions funded in extensions budgets.*

*** Preliminary estimate--actual cost to be determinined based on funding strategy: if AATC is not implemented, then conventional resignaling needed on A-line.*

**** These four projects are included as parts of the Joint Development Telecommunications Project.*

***** SORS Replacement alone is estimated at $3M. The additional $4M is for essential VPI equipment previously expected to be part of the "Train ID" project.*

NOTES

All figures in thousands of dollars (three decimal places dropped), showing the fiscal year in which funding needs to be programmed, in order to be commited to project contracts.

All figures calculated on a base of project cost in calendar year 1995 dollars, escalated at three percent per year, per MTC guidance.

I-E. Shops & Yards Rehabilitation

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 1									
Non-stock inventory (repairable parts provisioning)	49,161	1,200	47,961	1,500	3,245	3,501	4,262	4,502	30,951
Replace Hayward truing machine	1,500	1,500	0						
New wheel truing machine	1,820	1,820	0						
Replace Hayward wheel press	629	629	0						
Hayward Shop rehab/equip. replacement	1,558	1,558	0						
Replace dust collector systems at Richmond & Concord	1,170	1,170	0						
Replace parts washing facilities in all shops	390	0	390	60	330				
Central receiving/distribution warehouse facility	6,350	0	6,350	6,350					
Replace rail and turnouts in East Bay yards	5,075	0	5,075		227	477	628	647	3,095
Subtotal	***67,652***	***7,877***	***59,775***	***7,910***	***3,801***	***3,978***	***4,890***	***5,149***	***34,047***
Priority 2									
Recondition overhead cranes (Hay, Rich, Conc, DC)	1,212	0	1,212			345	464		402
Replace roofing on shops, towers, etc.	4,402	0	4,402		515	955		703	2,229
Overhaul transit vehicle washers (Rich, Conc, Hay)	1,076	538	538		538				
Reconfigure transportation buildings	1,500	0	1,500		1,500				
Richmond oil/water separator tanks	197	197	0						
Yard fuel tanks	23	23	0						
Metro bldg. fuel tank	155	155	0						
Wheel/rail maintenance study	300	300	0						
Rich. Yard efficiency modifications	353	353	0						
Replace purchasing & inventory control system	567	0	567		567				
Subtotal	***9,783***	***1,566***	***8,217***	***0***	***3,119***	***1,300***	***464***	***703***	***2,631***
Priority 3									
Recondition shop sump pumps (Rich, Conc, Oak)	258	0	258		258				
Second wheel/axle press (location TBD)	1,545	0	1,545		1,545				
Paint and repair room	2,000	0	2,000		2,000				
Rehabilitate and reconfigure Oakland Shop	75,155	0	75,155		155					75,000
Additional tracks at Hayward Yard	103	0	103		103				
Subtotal	***79,060***	***0***	***79,060***	***0***	***4,060***	***0***	***0***	***0***	***75,000***

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I-E. Shops & Yards Rehabilitation (continued)

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 4									
Replace shop roll-up doors (Rich, Hay, Conc, Oak)	1,248	0	1,248		824	424			
Replace shop radiant heaters	206	0	206		206				
Resurface roads/parking and relamp shop/yard exterior lights	309	0	309		309				
Reconfigure/replace grease/oil facilities (Hay, Rich, Conc, DC)	155	0	155		155				
Repaint shop floors	515	0	515		515				
Replace yard disconnect enclosures	613	0	613		129	239	246		
Replace heating/cooling systems at East Bay shops	2,575	0	2,575		2,575				
Replace heating/cooling system at Lake Merritt Admin.	4,635	0	4,635		4,635				
Replace heating/cooling system at Cash Hdlg. Bldg.	515	0	515		515				
Richmond shop, yard & tower security improvements	1,359	0	1,359		670	690			
Subtotal	***12,130***	***0***	***12,130***	***0***	***10,532***	***1,353***	***246***	***0***	***0***
Priority 5									
Corrosion protection isolation of East Bay yard traction power	3,090	0	3,090		3,090				
Recondition restrooms and locker rooms all shops	157	0	157		77	80			
Storage area canopy, lighting and office at Richmond Shop	180	0	180		180				
Rehab all shop offices	186	0	186			186			
Subtotal	***3,613***	***0***	***3,613***	***0***	***3,348***	***265***	***0***	***0***	***0***
Category Total	**172,238**	**9,443**	**162,795**	**7,910**	**24,859**	**6,896**	**5,600**	**5,853**	**111,678**

NOTES

All figures in thousands of dollars (three decimal places dropped), showing the fiscal year in which funding needs to be programmed, in order to be commited to project contracts.

All figures calculated on a base of project cost in calendar year 1995 dollars, escalated at three percent per year, per MTC guidance.

I-F. Work Equipment

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 1									
Replace gasoline-powered maintenance equipment	*400*	*400*	*0*		*0*	*0*	*0*	*0*	*0*
Priority 2									
Barcode system for cash handling	612	612	0						
Office computers, LANs, WANs	2,975	0	2,975	300	300	100	200	225	1,850
Replace floor scrubber machines	100	100	0						
Curve rail analysis equipment	839	0	839		839				
Install Positron test rack	50	50	0						
Replace tolltest workstation	50	0	50		50				
Replace CC&R tools and test equipment	950	0	950	50	100	200	200	200	200
Replace RS&S tools and test equipment	500	0	500	25	25	50	175	25	200
Replace P&W tools and test equipment	1,625	0	1,625	25	400	100	100	100	900
Replace OA&FM tools and test equipment	250	0	250	25	25	25	25	25	125
Replace Transportation Dept. tools & equip't.	250	0	250	25	25	25	25	25	125
Replace forklifts	297	197	100			50			50
Replace police cars	2,750	0	2,750	150	400	150	400	150	1,500
Replace vans	1,620	0	1,620	300	90	170	270	170	620
Replace pick-ups	2,820	0	2,820	250	330	430	280	280	1,250
Replace armored tractor-trailer truck	630	0	630			130			500
Replace hi-rail crew trucks	1,630	0	1,630		380	250	250	250	500
Replace hi-rail dump truck (track & structures)	240	0	240		240				
Replace hi-rail fire trucks	700	0	700			350	350		
Replace hi-rail rerailing crane	450	0	450			450			
Replace hi-rail yard switchers	550	0	550		550				
Replace hi-rail wrecker	250	0	250			250			
Replace hi-rail multi-crane	300	0	300		300				
Replace boom truck (stinger)	100	0	100		100				
Replace hi-rail speed swing	200	0	200				200		
Replace backhoe/tractor	75	0	75			75			
Replace hi-rail vacuum truck	200	0	200						200
Replace dump truck (grounds)	50	0	50						50
Replace double bucket truck	80	0	80						80
Replace hi-rail under-bridge truck	450	0	450			450			
Replace flat-bed truck	50	0	50			50			
Replace lube truck	110	0	110					110	
Replace hi-rail welding trucks	410	0	410		140		270		
Replace trailer-mounted 635 KW generator	70	0	70						70
Replace portable pumps	30	0	30				15		15
Retrofit locomotives	600	0	600		300	300			
Replace rail grinder	1,200	0	1,200						1,200
Replace tamper liner	600	0	600			600			
Replace ballast regulator	180	0	180			180			
Replace curve rail analysis equipment	825	0	825		825				
Recondition geometry car	1,800	0	1,800					1,800	
Subtotal	***27,468***	***959***	***26,509***	***1,150***	***5,419***	***4,385***	***2,760***	***3,360***	***9,435***

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I-F. Work Equipment Replacement (continued)

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need 1996	1997	1998	1999	2000	2001-05
Priority 3									
Replace electric maintenance carts and chargers	520	0	520		270			250	
Replace automotive lifts at all shops	380	0	380		310	70			
Replace air compressors at all shops	430	0	430		350		80		
Replace lathes and mills at Hayward and Oakland	210	0	210		210				
Replace machine shop equip. (Conc, Hay, Rich, D	50	0	50						50
Portable 3MW traction power substation	1,600	0	1,600		1,600				
Replace sedans	1,140	0	1,140		140	170	190	100	540
Replace forklift	60	0	60		60				
Replace trailer-mounted welder	40	0	40					20	20
Replace trailer-mounted compressor	70	0	70						70
Replace trailer-mounted 50 KW generator	40	0	40					40	
Replace portable 3 KW generators	15	0	15					15	
Replace heavy-duty trailer	60	0	60					60	
Replace light-duty trailer	30	0	30					30	
Equipment for technical training labs	400	0	400		200	200			
Subtotal	***5,045***	***0***	***5,045***	***0***	***3,140***	***440***	***270***	***515***	***680***
Priority 4									
Replace trailer-mounted chipper	25	0	25					25	
Replace bobcat small tractor	40	0	40						40
Replace steam cleaners (Hay, Conc, Rich, DC)	80	0	80		20	10	10		40
Subtotal	***145***	***0***	***145***	***0***	***20***	***10***	***10***	***25***	***80***
Priority 5									
Replace trash compactors	*300*	*0*	*300*	*0*	*230*	*0*	*70*	*0*	*0*
Category Total	33,358	1,359	31,999	1,150	8,809	4,835	3,110	3,900	10,195

NOTES

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II. Extensions

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need 1996	1997	1998	1999	2000	2001-05
Priority 1									
to East Dublin-Pleasanton	514,050	514,050	0						
West Dublin/Pleasanton station	32,000	0	32,000		32,000				
to West Pittsburg-Bay Point	505,742	505,742	0						
Pittsburg-Bay Point to Railroad Ave.	124,000	104,000	20,000				20,000		
to Warm Springs *	540,800	348,000	192,800						192,800
to Colma	170,179	170,179	0						
to San Francisco Airport **	1,269,000	86,622	1,182,378	1,182,378					
Oakland Airport Connector ***	137,124	1,124	136,000	5,000		131,000			
Commuter rail system ****	350,000	0	350,000		175,000	175,000			
Subtotal	***3,642,895***	***1,729,717***	***1,913,178***	***1,187,378***	***207,000***	***306,000***	***20,000***	***0***	***192,800***
Priority 2									
Phase 2 and 3 Extensions	TBD	3,295	TBD	TBD	TBD	TBD	TBD	TBD	TBD
to Antioch									
through West Contra Costa									
to Livermore									
within San Francisco									
through San Ramon Valley Corridor									
to Santa Clara County									
Subtotal	***TBD***	***3,295***	***TBD***	*TBD*	*TBD*	*TBD*	*TBD*	*TBD*	*TBD*
Category Total	**3,642,895**	**1,733,012**	**1,913,178**	**1,187,378**	**207,000**	**306,000**	**20,000**	**0**	**192,800**

* *Warm Springs cost estimate prepared in 1990; subject to updating when a new project schedule is determined.*

** *Estimated cost of proposed project in current Locally Preferred Alternative; proposed funding plan includes $800M total from FTA ($57.6M received to date including AA), $99M total from Samtrans ($14.5M received to date), $98M total in state funds ($14.5M received to date), $200M in a commitment from the City of San Francisco, and $72 million from other state and local sources.*

*** *BART and Port of Oakland would each contribute $500,000 local match if the project is selected by FTA for SLRT PE/EIS funding, and both agencies would also contribute to the local match for construction if approved by FTA for implementation.*

**** *Commuter Rail Program costs based on one-time capital cost and start-up cost of equipment and right-of-way.*

NOTES

All figures in thousands of dollars (three decimal points dropped).

III. Seismic Retrofit Program

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 2									
Seismic rack anchors & vehicle support tiedowns	402	0	402		402				
Seismic restraints on overhead cranes	201	0	201		201				
Engine-generators for earthquake standby power #1	4,423	0	4,423		2,318	2,106			
Engine-generators for eqrthquake standby power #2	2,158	0	2,158		211	1,947			
Seismic structural evaluation of aerial structures	1,143	0	1,143		1,143				
Seismic retrofit of aerial structures	217,797	0	217,797			24,401	25,133	25,887	142,377
Seismic sensing system upgrade	2,493	0	2,493		2,493				
Gas valve automatic seismic shut-offs	170	0	170			170			
Retrofit Transbay Tube seismic joints	618	0	618		618				
Category Total	229,404	0	229,404	0	7,385	28,623	25,133	25,887	142,377

NOTES

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IV. Service Improvements

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 2									
A-line traction power enhancements	20,693	0	20,693			2,122			18,571
M-line traction power enhancements	46,690	0	46,690			9,548			37,142
C-line traction power enhancements	6,365	0	6,365			6,365			
R-line traction power enhancements	22,104	0	22,104			15,914			6,190
Expand Hayward Shop	20,871	0	20,871				20,871		
Expand Concord Shop	10,197	0	10,197		10,197				
Subtotal	***126,920***	***0***	***126,920***	***0***	***10,197***	***33,949***	***20,871***	***0***	***61,903***
Priority 3									
Additional Capacity Enhancement Program *	2,000,000	0	2,000,000						2,000,000
Add new bike lockers	178	178	0						
El Cerrito Plaza access and station area improvements	5,500	5,500	0						
Hayward transit center	1,142	1,142	0						
BayFair transit center	1,007	1,007	0						
Concord transit center	2,318	2,318	0						
Walnut Creek transit center	2,930	2,930	0						
Daly City transit center	6,650	6,650	0						
Pl. Hill park/ride for I-680/24 mitigation	977	689	288		140	148			
West Oakland access and station area improvements	TBD	0	TBD						
Fruitvale access and station area improvments	TBD	0	TBD						
Union City access and station area improvements	TBD	0	TBD						
Rockridge access and station area improvements	TBD	0	TBD						
El Cerrito Plaza transit center (AC Transit funding)	335	0	335		335				
Richmond transit center (AC Transit funding)	625	0	625		625				
Fruitvale transit center (AC Transit funding)	2,675	0	2,675			2,675			
Fremont transit center (AC Transit funding)	3,337	0	3,337			3,337			
South Hayward transit center (AC Transit funding)	1,280	0	1,280			1,280			
Coliseum transit center (AC Transit funding)	732	0	732				732		
Union City transit center (AC Transit funding)	3,054	0	3,054				3,054		
West Oakland transit center (AC Transit funding)	207	0	207					207	
New administrative headquarters building	60,000	0	60,000		30,000	30,000			
Subtotal	***2,092,947***	***20,414***	***2,072,533***	***0***	***31,100***	***37,440***	***3,786***	***207***	***2,000,000***
Priority 4									
Station escalator entrance canopy enclosures	*32,556*	*0*	*32,556*	*0*	*0*	*0*	*6,556*	*0*	*25,999*
Category Total	2,252,422	20,414	2,232,008	0	41,297	71,389	31,213	207	2,087,902

* *Includes additional revenue vehicles; additional traction power and train control rehabilitation and upgrades; other reliability improvements; improved station circulation and access; and further expansion of maintenance shop and storage yard facilities; in order to support an increase in daily patronage from 361,000 daily under the currently projected growth plan, to 500,000 daily under and "Additional Capacity Enhancement" program.*

NOTES

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V. Research, Development and Demonstration

	Total Cost	Funding to date	Funding Req't.	Fiscal Year Need					
				1996	1997	1998	1999	2000	2001-05
Priority 2									
Electric Station Cars demonstration	1,441	1,441	0						
Electric vehicle charging kiosk demonstration	1,100	1,100	0						
Sound mitigation/noise reduction program	TBD	350	TBD						
Superconducting Magnetic Energy Storage	TBD	350	TBD						
Adaptive diagnostic systems	TBD	75	TBD						
Traction power optimization	TBD	0	TBD						
Joint Development Entrepreneurial Study	250	250	0						
Other	TBD	0	TBD						
Category Total	**TBD**	**3,566**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**	**TBD**

NOTES

All figures in thousands of dollars (three decimal points dropped).

CHAPTER 4

PROJECT DESCRIPTIONS

System Rehabilitation Program

The projects and costs associated with the BART System Rehabilitation Program are generated from replacement cycles based on the useful life of the various components of the physical plant.

Rolling Stock Rehabilitation

A&B Car Rehabilitation

The rehabilitation of the District's original fleet of A and B Cars is essential to enable the District to continue to provide for current and future service demand levels. The District has one of the oldest average fleet ages in the transit industry. The A and B Cars will be 25 years old prior to rehabilitation and have never been overhauled. The rehabilitation will replace worn out and obsolete components and return the vehicles to their original design specifications. Systems to be replaced or rebuilt include electrical, suspension, braking, coupling, heating and cooling, upholstery and carpeting. The rehabilitation is intended to add twenty years of service life to the cars, improve their reliability, and bring them into compliance with the requirements of the Americans With Disabilities Act (ADA). The cost of remanufacturing vehicles is estimated at approximately 50 percent of new car cost.

Replace Electrical Couplers on C-1 Cars

The existing "pin-type" inter-car electrical couplers on BART cars are very high maintenance items. Conversion to "button-type" couplers will reduce maintenance requirements and car out-of-service time.

Install of Automatic Train Control Restoration Units

Failure of the on-board vehicle automatic train control system is one of the major causes of service disruption. This project is a retrofit of the existing systems, which will provide two valuable functions. First, the new units will dramatically increase the speed with which recovery from such failures can be accomplished, thereby putting temporarily disabled on-line trains back in service much faster. Second, the new systems will capture and record critical information about failures, improving the efficiency of maintenance.

Replace A&B Car Door Components

Malfunctions of the door systems on A&B cars is a major factor in service disruptions, and needs to be addressed earlier than can be accomplished through the whole car rehabilitation program. One problem Is expansion of the foam comprising the door core, which then delaminates the door structures and causes jams. Another problem is corroded door suspension rails are also contributing to door failures.

Mainline Rehabilitation

The purpose of this program of projects is to replace and rehabilitate those components and subsystems of BART's mainline which have deteriorated, or will in the next ten years, due to age and use. Many components of the trackway and traction power systems are over 23 years old, are failing with increased frequency and must be reconditioned or replaced. Mainline rehabilitation will prevent rail and traction power failures which would cause disruption and delays to revenue service. The highest priority Mainline Rehabilitation projects include:

Replace Running Rail and Accessories

This on-going project replaces curve-worn rail and switch components in high density train traffic areas. Due to the rail wear caused by the wheel-rail interface, rail and switch components in high usage areas require changeout on a three to five year cycle.

Rehabilitate Subway Ventilation Line Fans

This project will replace all ventilation fan blades in tunnels and subways throughout the system. This work is required to upgrade the ventilation fans that are used for emergency evacuation and for maintenance crews working in subway sections. In the past, failures of fans have been experienced due to cracks that developed in the blades, causing the blades to fail. An engineering analysis was made of all ventilation fans throughout the system and it was found that the blades require replacement.

Recoat Tunnel Liner Rings and Structural Girders for Corrosion Protection

The steel rings that line BART tunnels must be undergo heavy maintenance periodically, including removal of corrosion encrustation, sandblasting, and application of corrosion-resistant coating. The BART aerial structural girders and bridges have not undergone a complete rehabilitative repainting since their construction in the 1960's and early 1970's. This work is essential to avoid corrosion and consequent structural deterioration and weakness.

Transbay Tube Cathodic Corrosion Protection

The steel outer skin of the Transbay Tube is protected from saltwater corrosion through the use of anodes which attract the forces of corrosion and are consumed in the process. These anodes must be replaced on a cycle of about every ten years.

Replace Sump Pumps in Subway Tunnels

The sump pumps which keep BART subway tunnels dry are over 23 years old and are becoming unreliable and expensive to maintain. The ability to pump water out of tunnels is critical to keep the system safe and reliable.

Asbestos Abatement

The 1989 Loma Prieta earthquake disrupted asbestos insulation in train control electronics rooms at various locations around the District. These rooms can now be entered by maintenance personnel only when fully suited up for potential asbestos exposure, making such maintenance much more difficult, time-consuming, and expensive.

Right-of-Way Fencing

Wherever BART tracks run on the surface at grade, the length of the right-of-way is fenced to prevent unauthorized and unsafe access to the trackway. This fencing must be replaced periodically due to normal deterioration or due to vandalism. This is a critical safety item.

Replace Traction Power House Roofs

Six traction power substations have been identified as being in critical need of repair. The roofs are constructed of steel decking and in some cases, have rusted completely through. Water incursion into substations can result in traction power failures and serious service disruption.

Reinforce Third Rail Coverboard Mountings

The traction power (or "third") rail is protected from exposure by a coverboard mounted above it. Over time, the mountings have deteriorated, allowing the coverboard to work loose. This poses a hazard in that a loose coverboard can come into contact with the power collection "paddle" that extends from the train cars. Such a collision can shear off collection paddles and/or a section of coverboard. Either occurrence can result in a major service disruption and possible hazardous situation.

Replace 1000-Volt Flex Jumpers

The primary traction power distribution cables are joined to the third rail by means of flexible jumper cables. These jumpers are allowed to move to accommodate vibration and expansion of the rail due to thermal fluctuations. The jumpers are exposed to weather, ultra-violet radiation, and abrasion. Many of these cables have become worn to where they are subject to failure. Such failure can result in loss of power to trains, meaning service disruption, and well as localized electrical arcing and potential fire hazard.

Replace Asbestos-Containing Arc Chutes

The traction power distribution system includes 1000 volt circuit breakers which cycle open and closed. The action of these breakers creates sizable electrical arcs which must be contained and extinguished, which is accomplished with "arc chutes". The existing chutes are lined with asbestos as insulation, which creates a potential exposure hazard to maintenance personnel.

Replace Berkeley Hill Tunnel Fan Controller

This project will replace the aging controller on the ventilation/smoke exhaust fans in the Berkeley Hills Tunnel. The new controller will be fault-tolerant and have programmable logic to provide greater reliability and flexibility of operation.

Widen I-80 Overcrossing

Caltrans has purchased right-of-way from BART in conjunction with the I-80 widening project, the proceeds from which BART will use to accommodate a wider overcrossing, also in conjunction with the freeway project.

Traction Power Rehabilitation

This is a long-term program to rehabilitate a wide range of traction power components and subsystems as these items continue to age and deteriorate, leading to lower reliability and higher potential for service disruption. Individual items will include reconditioning of rectifiers and replacement of grounding systems, dielectric liquids in power transformers, traction power control batteries, switch enclosures, and gas-pressure cable pipes.

Mainline Rehabilitation also includes the following representative projects:

- Repair of damaged portions of subway tunnel under the Lake Merritt Channel.
- Repair of damage in San Francisco approach tunnel.
- Replacement of contact rail (third rail for traction power).
- Replace surfaces at right-of-way maintenance set-on points.

Stations Rehabilitation

The purpose of this program of projects is to improve the customer experience in stations by rehabilitating or replacing equipment that is worn, unreliable, obsolete, or no longer economical to clean or repair. The highest priority Stations Rehabilitation projects include:

Station Security Program

This project will increase the illumination levels of surface parking lots, add emergency police callboxes in parking lots, improve police radio communications in multi-level parking structures, and provide decentralized headquarters structures to accommodate community-based deployment of BART police forces.

Replace Four Embarcadero Station Escalators

This project will replace four modular escalator platform units at the Embarcadero Station. These escalators have high failure rates and are costly to repair in both time and material due to their particular design. When a platform unit is out of service, it creates a potential safety concern due to crowding on the platform.

Rehabilitate Station Elevator Valves and Sills

This project will rehabilitate station elevators which have been in service for over 23 years. This project is necessary to make the elevators more reliable and safe. Due to the age of the elevators, trouble calls are increasing and equipment is out of service for longer intervals causing inconvenience to passengers, especially the elderly and mobility-impaired.

Repair Concrete Roof of Lake Merritt Station

This project will repair the structurally deteriorated concrete roof and replace waterproofing over a portion of the mezzanine level of the Lake Merritt Station under Oak Street. The damaged concrete roof has caused water leakage in the south stairway area making it necessary to close that stairway whenever it rains. The water intrusion will also corrode the reinforcing steel in the concrete roof causing further structural deterioration. Implementation of this repair work will restore the structural integrity of the concrete roof and provide safe and uninterrupted patron access between mezzanine and platform levels.

Repair Platform Sub-Surfaces at Various Stations

Platform edge sub-surfaces are deteriorating at several stations, causing the platform edge detection tiles to begin to lift and create potential tripping hazards for patrons. Repairs are required constantly and are very labor intensive. It is necessary to reconstruct the sub-surfaces to allow a stronger bond for the tiles.

Replace Raised and Damaged Concrete Walks at Stations

This project will replace concrete walkways that have been raised and damaged by growing tree roots and ground movement, causing tripping hazards.

Replace Maps and Signs in Stations

This project will update and replace the current porcelain enameled maps and transit information displays in all BART stations. The replacement is required to reflect the new extension stations and to update current local transit information. This project will provide a graphic display system that is more flexible and more easily updated than the current maps which have not been updated since they were originally installed in 1972.

Replace Station Roofing

The roofs of stations and weather protection canopies deteriorate with age and exposure to the elements. In order to protect patrons from potential slipping hazards, protect equipment and furnishings, and avoid structural damage, roofing must be replaced on a periodic basis.

Replace Sewage Pumps in Underground Stations

Sewage from bathrooms in underground stations must be pumped up into the city sanitary sewer collection system. The existing pumps have been in place since the BART system opened over 23 years ago. They are becoming increasingly unreliable and uneconomic to maintain. These pumps must be functional as a matter of patron convenience and public health.

Repair Stair Tread Edges and Replace Anti-Slip Treatments

The anti-slip treatment originally applied to help protect patrons from slipping and falling on station stairs has worn away in many locations throughout the District. This treatment must be renewed in order to protect the safety of those who use the stairs, especially during wet weather.

Replace Platform Edge Detection Tiles

The existing platform edge tiles, intended to provide a visual and tactile warning of the adjacent drop-off into the trackway pit, have been worn heavily due to normal foot traffic at many stations and are delaminating from the platforms as well. They need to be replaced to remain safe and functional.

Key Station (ADA) Accessibility Improvements

These projects will provide federally-mandated accessibility modifications to 20 Key Stations. They are designed to improve the accessibility of the existing stations for disabled persons by providing new accessible route information and signs, modifying the street elevator at the 12th Street Station, removing architectural barriers that are potential safety hazards, and meeting standards for the supply of accessible car and van parking. These projects are needed to comply with Americans With Disabilities Act (ADA) requirements and to improve passenger safety.

Accessible AFC Equipment (ADA compliance)

This project will provide a new accessible fare vendor, faregate and addfare machine for each Key Station. It will also provide modifications to credit/debit vendor equipment to make it accessible and in compliant with the ADA requirements.

Replace Automatic Fare Collection Equipment Air Dryers

The faregate barriers are driven by compressed air, which in turn must be dehumidified through use of a refrigerant. New air quality regulations ban the use of the CFC refrigerant used in the existing dryers. The existing dryers cannot be modified to use newly-developed types of refrigerants, and the replacement AFC equipment will not be in place for several years, so the existing dryers must be changed as an interim measure.

Replace Automatic Fare Collection Equipment

This project will replace all faregates, ticket vendors and addfares throughout the AFC system in the 34 existing stations. The project needs to be done to: decrease revenue collection and maintenance costs through use of more modern servicing modules; increase revenue security and accountability through use of sealed coin and bill units; implement an upgraded Data Acquisition System; and increase equipment availability for customers through greater reliability and maintainability. The urgency of the project is driven by the need to capture maintenance and security benefits, while avoiding deterioration of customer service levels as existing equipment approaches the end of its useful service life. The ticket vendor portions of this project is expected to receive Section 9 funding. BART and MTC are jointly exploring options for funding the faregate portion of the project, in order to ensure regional compatibility with the multi-operator Translink "universal" ticket program.

Replace Station Security Gates

The first part of this project will replace heavy usage security gates that are in the worst condition after being in service for over 23 years. In later years a subsequent phase of this project would replace those gates that are worn but not yet in critical condition. The maintenance department is repairing failures in these gates on a daily basis. In addition, gate parts for repairs are difficult to obtain as the gates have become obsolete. When gates fail and parts are not available to make repairs, they are out of service for long periods of time and in some cases the situation requires additional security measures to protect the station. This project will also convert some manually-operated security gates at stations to motorized gates.

Replace and Rehabilitate Escalators and Elevators

The escalators and elevators throughout the system are the original installations (four of the escalators at Embarcadero Station are currently being replaced). These units carry extraordinarily heavy loads, particularly in the various downtown subway stations. After more than 23 years of use and wear-and-tear, they are becoming unreliable, a major source of patron dissatisfaction, and uneconomical to maintain and repair on a routine basis. Almost all of the units need a complete reconditioning, and several of the most unreliable need to be replaced.

Refurbish and Install In-Storage Faregate Units

The District has 30 faregate units in long-term storage, which would be refurbished and installed at various locations where exit faregate queuing problems occur.

Replace/ Recondition Station Public Address Systems

This project would recondition or replace, as warranted, public address systems at those stations where the volume and/or voice quality of the existing installation has deteriorated to the point of not being able to provide an acceptable level of information to patrons.

Refurbish Station Agent Consoles and Booths

The electronics in the station agent consoles are still the original installations. Most of these electronics are obsolete and no longer supported by manufacturers, making the maintenance of these increasingly unreliable units time-consuming and excessively expensive. The agents' booth structures are also in need of general refurbishment.

Replace Fire Mains At Three Stations

The water mains that supply firefighting water to three stations in southern Alameda County have been found unable to maintain the high pressure levels required in periodic testing. These mains are being replaced.

Replace Fire Alarms At Four Stations

The fire alarm systems at the four downtown San Francisco stations are obsolete and difficult to maintain. They are being replaced.

Replace Bike Lockers

The bicycle storage lockers at stations have deteriorated to the point of not providing an acceptable level of security and weather protection, and are being replaced.

Replace Air Conditioning Units In Station Agent Booths

The small air conditioning units used to cool station agents' booths are at the end of their design lifetimes, and must be replaced.

Stations Rehabilitation also includes the following representative projects:

- Replace bus transfer machines.
- Replace obsolete station lighting systems.
- Refurbish landscaping and irrigation systems.
- Restore weather projection canopies and windscreens.
- Resurface parking lot surfaces.
- Refurbish restrooms.
- Restore missing and damaged wall tile.
- Restore worn brick and tile flooring.

Controls & Communications Rehabilitation

The purpose of this program of projects is to rehabilitate BART's controls and communications systems, including replacement of deteriorated and obsolete components and subsystems. The highest priority Controls & Communications Rehabilitation projects include:

NXTGEN Program

This project will replace obsolete on-line operational computer control systems. The systems included in this budget are the Destination Sign System (DSS) software, the Data Acquisition System (DAS), the Train Information Monitor System (TIM), and the Central Computer System (CCS). This project is needed to replace the 23-plus year old computers running the DAS and DSS systems and the 13-year old CCS computers.

Replace Radio Network

This project will design, furnish, and install a systemwide multi-frequency, trunked radio network to replace the equipment used by train operations, station operations, BART Police, and maintenance forces. The current radio system has significant shortcomings, both in terms of capacity and reliability, which have frequent negative operational impacts and occasionally affect safety. BART has already been assigned broadcast frequencies, which are increasingly difficult to obtain. Federal radio regulations require that BART put these new frequencies into service within a few years or forfeit them to other users. This project is being implemented through an innovative joint development program with private sector financing.

Advanced Automatic Train Control

This project will install an advanced train control technology which will enable the BART system to nearly double its train carrying capacity. When implemented between Bay Fair and Daly City stations, this project would allow system throughput to increase from the current 17 trains per hour up to 30 trains per hour. The system will be one which can be installed over the existing control equipment with relative ease and no service disruptions. The project will help BART to meet the increased demands on the system as headway reductions become necessary in the future. Defense conversion funding has been secured for the first phases of the project, which involve technology development and field testing.

Replace Workstation Consoles in Central Control

This project will replace existing Central Control workstations that are obsolete and cannot be expanded. In addition, the extensions budgets will provide for an increase in the number of work stations overall. This project provides the display hardware, local area network (LAN) interface equipment, software, installation and testing to make the units fully functional in BART's Central Control facility.

Replace Maintenance Vehicle Detection Devices

This project replaces the maintenance vehicle detection devices used in specialized high-rail maintenance vehicles. These vehicle detection devices are required to allow Central Control to observe the location of on-track maintenance vehicles. This detection system serves as a safety device to prevent trains from entering into the work area where a maintenance vehicle is occupying mainline track. The units presently being used have been in service over 23 years and failure rates are increasing. When a failure occurs, the high-rail maintenance vehicle must be removed from mainline track, per PUC requirements, resulting in non-productive time in maintenance work schedules requiring single tracking.

Wayside Train Control Rehabilitation

This is a long-term program to replace vital wayside train control components and subsystems which are becoming unreliable due to age and difficult to maintain due to obsolescence. Most of these components are no longer being produced and are no longer supported by manufacturers. If this work is not completed in a timely manner, essential train control hardware failures will lead to extensive disruption of service.

Replace Sequential Occupancy Release System

SORS is a Public Utilities Commission required back-up safety system to ensure that on-line trains maintain a safe separation distance in the event of any malfunction or failure of the vital train control system. The primary SORS computer is over 23 years old, is obsolescent, and becoming difficult to maintain. This safety critical system must remain operational and reliable.

Replace T-1 Cable

The T-1 cable is the primary data transmission cable that runs throughout the BART right-of-way, and links the entire system together. It is being replaced as part of the radio network/telecommunications project.

Recondition and Replace MIS Computer

The District's MIS mainframe computer will need to be upgraded in FY1996 to accommodate increased demand for administrative computing power. The entire unit will need to be replaced several years later, as it will ultimately become obsolete.

Replace Yard Voice Recorders

Located in each train storage and dispatch yard are multi-channel voice recorders which record all communications regarding train movements. This information can be critical in determining exactly what occurred in the event of any sort of accident involving trains in the yards. The existing units are becoming unreliable and hard to maintain.

Reverse Running In Transbay Tube

Existing train control electronics currently restrict reverse running in the Transbay Tube to one train at a time. Reverse running is a critically important function for recovering quickly from service disruptions in the Tube. This modification will provide the necessary signaling to allow up to three trains simultaneously in the Tube.

Second Communications Specialist Position In Central Control

As the extensions become operational and the number of trains on-line increases, it will become necessary to have a second position from which BART communications specialists can make essential announcements about train movements, service disruptions, special conditions and other events that affect patrons.

Controls & Communications Rehabilitation also includes the following representative projects:

- Replace the deteriorating train destination signs on station platforms.
- Replace the Digital Transmission System.

Shop & Yards Rehabilitation

The purpose of this program of projects is to address the deterioration of the shops and yards due to more than two decades of continuous use and age, and to provide adequate facilities to store and maintain a growing fleet of revenue vehicles. These projects will improve passenger transit service by improving revenue vehicle reliability through better maintenance, and by reducing vehicle out-of-service time and keeping as many vehicles in service as possible, thereby reducing train crowding; make the shops and yards safer places in which to work; provide cost savings to the District by reducing maintenance turn-around time and eliminating travel time to and from vendors; and improve the efficiency of the shops and yards by providing employees with dependable equipment needed to perform their duties effectively. The highest priority Shops & Yards Rehabilitation projects include:

Non-Stock Inventory (repairable parts provisioning)

This program maintains adequate inventory of all repairable parts in support of all transit vehicles, station and field equipment, and AFC equipment. Failure to provide for these requirements could lead to vehicles out-of-service and potential disruption to normal maintenance and service operations. This on-going need must be funded annually.

Replace Wheel Truing Machine

This project replaces a 21 year old wheel truing machine in the Hayward Shop. The new, more reliable and higher capacity truing machine will allow the District to go to a higher standard of preventive maintenance for wheel profiles and will result in increased productivity and lower load factors since fewer cars will be held out-of-service waiting for wheel re-profiling.

New Wheel Truing Machine

The new truing machine at the Richmond Shop will accommodate the increased fleet size associated with operation of the extensions and additional vehicles for patronage growth in the future. It will also help the District to go to a higher standard of preventive maintenance for wheel profiles and will result in increased productivity and lower load factors since fewer cars will be held out-of-service waiting for wheel re-profiling.

Replace Wheel Press

This project replaces the one existing wheel/axle press with a higher capacity press. This is necessary in order to keep up with the demand for rebuilt axle assemblies and to ensure that axle assemblies can be maintained for the growing vehicle fleet.

Hayward Shop Rehab/Equipment Replacement

This project will rehabilitate the shop and replace maintenance equipment to support BART's aging fleet. This rehabilitation is necessary to keep up with increased demand, will result in increased productivity, and will reduce the time cars will be held out of service for repairs in the future.

Replace Dust Collector Systems at the Richmond & Concord Shops

This project will bring the Richmond and Concord blow pit ventilation systems into compliance with CalOSHA regulations regarding employee exposure to airborne contaminates. It will also proved minimal rehabilitation of shop heating and cooling systems.

Replace Parts Washing Facilities in All Shops

This project replaces parts-washing facilities in all shops so the District will comply with environmental requirements. Parts-washing waste water needs to be specially handled to meet environmental discharge laws. The District will be subject to citations and a possible shutdown of facilities if found not to be in compliance.

Central Receiving and Distribution Warehouse Facility

The District will face increased need for inventory of materials as the new system extensions come on-line, as the size of the operating fleet increases, and as parts must be stocked for A and B cars as configured both before and after rehabilitation. A new central receiving and distribution warehouse facility will meet those needs.

Replace Rail on Turnouts in East Bay Yards

This program will replace worn 90 pound rail, switch points and stock rails in yard throats. The 90 pound rail section is no longer used in the railroad industry and is very difficult to procure. In order to maintain rail and switch components in yards at a level to reduce the chance of derailment and support revenue service, it will be necessary to upgrade 90 pound rail and switch components to 119 pound rail section in heavy usage switching areas. The supply of 90 pound rail is being depleted and once this occurs, rail maintenance schedules will not be met, interfering with yard operations.

Recondition Shop Cranes

The existing heavy maintenance cranes located in the East Bay shops are still the original installations. Safe operation of these lift units must be assured through periodic reconditioning.

Replace Roofing On Shops and Towers

The roofs of the shops and towers protect personnel and equipment from exposure to the elements. These roofs must be replaced periodically as the deteriorate due to age and exposure.

Overhaul Transit Vehicle Washers

The facilities used to wash the exterior of transit vehicles are still the original installations. They are becoming increasingly inefficient, and do not comply with current standards for containment and treatment of chemical-laden waste water. This project will bring the washers back up to design specifications and provide acceptable control of waste.

Reconfigure and Rehabilitate Transportation Buildings

These buildings at the train dispatch yards provide the essential administrative facilities for on-site train operations, as well as lunch/breakrooms, locker rooms, and other support facilities for on-duty train operators. The current configuration of these buildings is inadequate to serve the increased number of operators required to operate higher levels of service associated with the new system extensions.

Richmond Oil/Water Separator Tanks at Richmond Yard

The underground oil/water separators currently in service at Richmond Yard are corroded and leaking. The City of Richmond is requiring BART to replace these units with new double-walled separators or face a cut-off of access to effluent discharge facilities. This would shut down operation of the transit vehicle washer.

Yard Fuel Tanks

This project will install 500-gallon above-ground gasoline tanks and dispensing units at the Richmond and Hayward yards. This is an efficiency improvement which will eliminate to the need to bring maintenance vehicles from these outlying yards all the way into the Oakland Yard, as is now the case, to refuel.

MetroCenter Building Fuel Tank

The 4,000 gallon fuel tank located in the parking lot of the MetroCenter Building, which provides fuel for the emergency generator located on the roof of that building, is no longer in compliance with regulations for underground fuel storage. BART has been ordered by Alameda County to replace the tank.

Wheel/Rail Maintenance Study

This continuing study was mandated by the Public Utilities Commission as a result of its investigation into the December 1992 derailment in the Oakland Wye. Rail transit experts are reviewing the District's maintenance procedures as to its affect on the wheel/rail interface.

Yard Efficiency Improvements

This project will reconfigure trackwork at the Richmond Shop to improve staging and routing of cars to the new wheel truing machine to be installed there.

Shops & Yards Rehabilitation also includes these other representative projects:

- Add a second wheel/axle press.
- Replace shop sump pumps.
- Replace the shop roll-up doors.
- Improve security at the Richmond Yard complex.

Work Equipment

The purpose of this program is to replace worn and obsolete maintenance and service vehicles and maintenance equipment. This equipment includes such items as tools, power generator sets, light towers, grounds and buildings maintenance equipment, shop equipment, test instruments, light-duty highway vehicles, BART police and personnel sedans, and heavy-duty maintenance vehicles (diesel trucks, tractors, and track maintenance vehicles).

BART's maintenance equipment gradually becomes worn from use. Eventually it becomes more economical to replace the old equipment rather than repair it. The ongoing equipment replacement program assures that old, worn out equipment is replaced in a timely manner to minimize overall costs and ensure personnel safety. If this equipment is not replaced, overall costs will increase, maintenance crews will be disrupted by failed equipment, and service to patrons will deteriorate. The highest priority Work Equipment Replacement project is the replacement of gasoline-powered maintenance equipment used in subways with electrically-powered equipment, as required by CalOSHA tunnel safety orders.

Extensions Program

Phase 1 Extensions

The purpose of the Phase 1 Extensions Program is to expand the BART rail system to areas not yet directly served by rail but where extension commitments have been made. The areas include eastern Contra Costa and Alameda Counties, southern Alameda County, and northern San Mateo County. This program includes project planning and environmental review; property acquisition; design and construction of fixed facilities; design, procurement and installation of systems elements; and the purchase of vehicles.

Castro Valley and East Dublin-Pleasanton

The Dublin/Pleasanton project is a 13.8 mile double track extension to the original BART system. It begins with a connection to the existing Fremont BART line just south of the Bay Fair Station in San Leandro and continues eastward in the median of the I-238 and I-580 freeways to the end of the project in the Dublin-Pleasanton area. There will ultimately be three stations along the extension: one in Castro Valley located at I-580 and Redwood Road; a second station at West Dublin-Pleasanton near Stoneridge; and the third one at East Dublin-Pleasanton near Hacienda Business Park. This project is under construction. Funding for the West Dublin/Pleasanton Station has not yet been secured.

North Concord and Pittsburg-Bay Point

The North Concord/Pittsburg-Bay Point project is a 7.8 mile double track extension, and will have two stations. It will run north from the existing Concord Station to a new North Concord-Martinez Station and then east along Route 4 to a Pittsburg-Bay Point Station. Additionally, improvements will be made to the existing Concord Yard to increase operating efficiency on the extended line. This project is under construction. This project will be extended to Railroad Avenue in Pittsburg when funding is secured.

Colma

The Colma Station Extension will add one station approximately one mile past the Daly City Station. This will relieve future access and traffic circulation problems at Daly City and provide additional system access via I-280 and Route 1. It is also the first leg of the proposed extension to San Francisco International Airport. This project is under construction.

San Francisco Airport

The proposed San Francisco Airport Extension will extend the BART system further into San Mateo County from the new Colma Station to a station at San Francisco International Airport, with three other stations at Hickey, Tanforan, and Millbrae. The project is currently defined as tunneling under the Airport to a station in close proximity to the airline terminals, but alternative design options are still under analysis. This extension will help to reduce Bay Area-wide traffic congestion, improve air quality and provide a convenient, cost efficient transportation link between BART and CalTrain and to the West Bay communities.

Warm Springs

The Warm Springs Extension, as currently defined, will extend 5.4 miles of double track from the existing Fremont Station, continuing southward in the railroad corridor and terminating at the Warm Springs Station just south of Grimmer Avenue in Fremont. An intermediate station is planned at Washington Boulevard in the Irvington District. This extension will move BART further toward Santa Clara County and be an important step in "ringing the Bay".

Other Extension Projects

Oakland Airport Connector

The Oakland Airport Connector Project will directly connect the BART Oakland Airport/Coliseum Station with the Oakland Airport terminals, providing improved transit service for air travelers and air terminal employees. BART has completed an FTA-supported feasibility study as the first phase of the Suspended Light Rail Technology Pilot Project, and anticipates possible future selection to proceed to a second phase, preliminary engineering and environmental documentation.

Commuter Rail System

BART has completed an evaluation of three new commuter rail lines to serve the corridors planned for Phase 2 and 3 BART extensions (and beyond). This commuter rail program would add more than 200 miles of passenger rail service to the regional rail network. The program identifies a comprehensive service plan that would provide a near-term commute alternative, including critical intermodal connections, to alleviate bottlenecking in some of the most heavily congested commuter corridors in the Bay Area. This program would utilize equipment (leased or purchased) and trackage rights in order to implement service within two years of funding approval. BART and other local, regional, and state agencies are together developing strategies, including phased implementation, to identify and secure funding sources in the near term.

Phase 2 and 3 System Extensions

The BART capital program includes the future planned extensions to Antioch, Livermore, northwestern Contra Costa County, the San Ramon Valley, the South Bay, and other corridors. BART will pursue funding for further planning and development of these projects, but funding constraints indicate that their implementation will not be likely within the ten year timeframe of this current capital program.

Seismic Retrofit Program

The purpose of this program of projects is to bring the existing system up to the latest seismic standards to enhance the system's ability to safely endure severe earthquakes and quickly return to service by:

- Improving the structural strength of BART's aerial structures and Transbay Tube joints in order to withstand greater seismic forces.
- Improving the system of seismic detectors which slows or stops trains in the event of an earthquake.
- Installing automatic seismic gas shut-off valves.
- Providing engine-generators for the event of a possible PG&E power loss.
- Provide restraints for overhead crane structures at maintenance shops.
- Provide tie downs for the stands that transit vehicles are supported on during maintenance at the shops.

The structural strengthening components of this project will bring existing structures up to current seismic standards, and improve the ability of the system to withstand major earthquakes with little or no damage. Other components of this project will augment earthquake preparedness systems already in place to provide more coverage, more detailed and accurate information, and to permit faster response to protect the safety of the rail system, its patrons and employees.

Service Improvements Program

Reconfigure, Rehabilitate & Enlarge Hayward and Concord Shops

The increasing size of the operation fleet requires that the heavy maintenance facilities at these two shops be reconfigured, rehabilitated and expanded in order to increase their efficiency adequate to properly maintain the expanded fleet.

Additional Capacity Enhancement

The basic program of capacity enhancement projects listed as individual projects in this *Capital Improvement Program* is intended to accommodate patronage growth to 361,000 daily trips. The Service Improvement program area also includes this Additional Capacity Enhancement subprogram which would go well beyond the basic program, to accommodate growth to 500,000 daily trips. The Additional Capacity Enhancement subprogram is conceptual and still under development, but it would include additional transit vehicles; additional traction power and train control rehabilitation and upgrades; other reliability improvements; improved station circulation and access; and further expansion of maintenance shop and storage yard facilities beyond the projects listed separately in this *Capital Improvement Program*. This cost indicated for this item provides a preliminary estimate of what these additional improvements might entail.

West Oakland Access and Station Area Improvements

This project would be constructed in the area near West Oakland Station that is being considered for use by other agencies for the Cypress Corridor freeway replacement and inter-city rail service. The scope, cost and schedule for the project is subject to the results of these various planning activities.

El Cerrito Plaza Access and Station Area Improvement

Contra Costa County Measure C provides $5.5 million in funding for BART patron parking expansion at the El Cerrito Plaza Station. BART and the City are currently cooperating to determine the exact nature of this project. The scope, cost and schedule of this project will be finalized upon completion of that effort.

Hayward, BayFair, Concord, Walnut Creek, and Daly City Transit Centers

These projects will improve traffic circulation in the vicinity of these stations, and will improve the patron experience by providing upgraded bus waiting and loading areas, weather protection and other amenities. These projects are funded with Section 9 and STP/CMAQ, and state funds, and are underway.

AC Transit-Funded Transit Centers

AC Transit has applied for funding from a variety of sources to construct transit centers, as described above, at El Cerrito Plaza, Richmond, Fruitvale, Fremont, South Hayward, Coliseum/Oakland Airport, Union City, and West Oakland Stations. BART will implement these projects should they secure funding.

New Administration Building

This project would acquire a new administration building large enough to accommodate all of the District's administrative employees in a centralized location. It is often necessary for BART employees to conduct business with each other in person. Staff time could be used much more productively if employees did not have to travel among BART's various locations throughout Oakland in order to get things done. The acquisition of a new administrative building would improve efficiency and productivity.

Station Escalator Entrance Canopy Enclosures

This project would install 50 canopies over the escalators and pedestrian entry ways at ten underground stations in San Francisco, Oakland and Berkeley. This project would result in weather protection for patrons entering the stations, reduced escalator maintenance costs, less escalator down time, increased security during non-revenue service periods and generally improved access to stations.

Research, Development & Demonstration

Superconducting Magnetic Energy Storage (SMES)

Two related projects are intended to study the technical and economic feasibility of utilizing SMES technology to minimize voltage sag problems in critical locations in the system. Addressing the voltage sag problem is critical to plans to operate trains at closer headways to support projected future service levels. Two different approaches are being pursued. A Federal Transit Administration (FTA) grant is currently funding a study to evaluate the feasibility of applying SMES to the BART system. As part of this effort, BART expects to test a "solenoidal" SMES device. BART is also cooperating with private industry in applying for Advanced Research Project Administration (ARPA) defense conversion funding to develop and test a SMES device using the "torroidal" approach.

Electric Station Cars

The District is funded for a demonstration program to purchase 45 electric cars to be used by BART and PG&E employees for access to and egress from stations. The project will demonstrate that with "station cars", transit can provide an all electric door-to-door service that will attract new patronage.

Joint Development Entrepreneurial Study

This project will define and assess different public/private institutional arrangements to more effectively implement BART's Joint Development program. The project includes development of model documents for implementation of a selected arrangement, and development pro formas for up to three selected station sites to assess the viability of joint development. The FTA will use this study's report as a national model. The need to identify more effective public/private arrangements for joint development at BART is in keeping with the growing need to coordinate population and employment growth along with the BART fixed rail system, and thus reducing traffic.

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